The Builder.

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The Church of St. Mary the Virgin; St. Patrick's R.C. Church (Mr. T. Martin Cappon); Baptist Church (Mr. T. Martin Cappon); St. Enoch's Church (Mr. T. S. Robertson) ..... *Double-Page Ink-Photo.*

The Caledonian Insurance Company's Offices (Mr. J. Murray Robertson); Tyffe's Buildings, Nethergate (Mr. J. Murray Robertson)..... *Double-Page Ink-Photo.*

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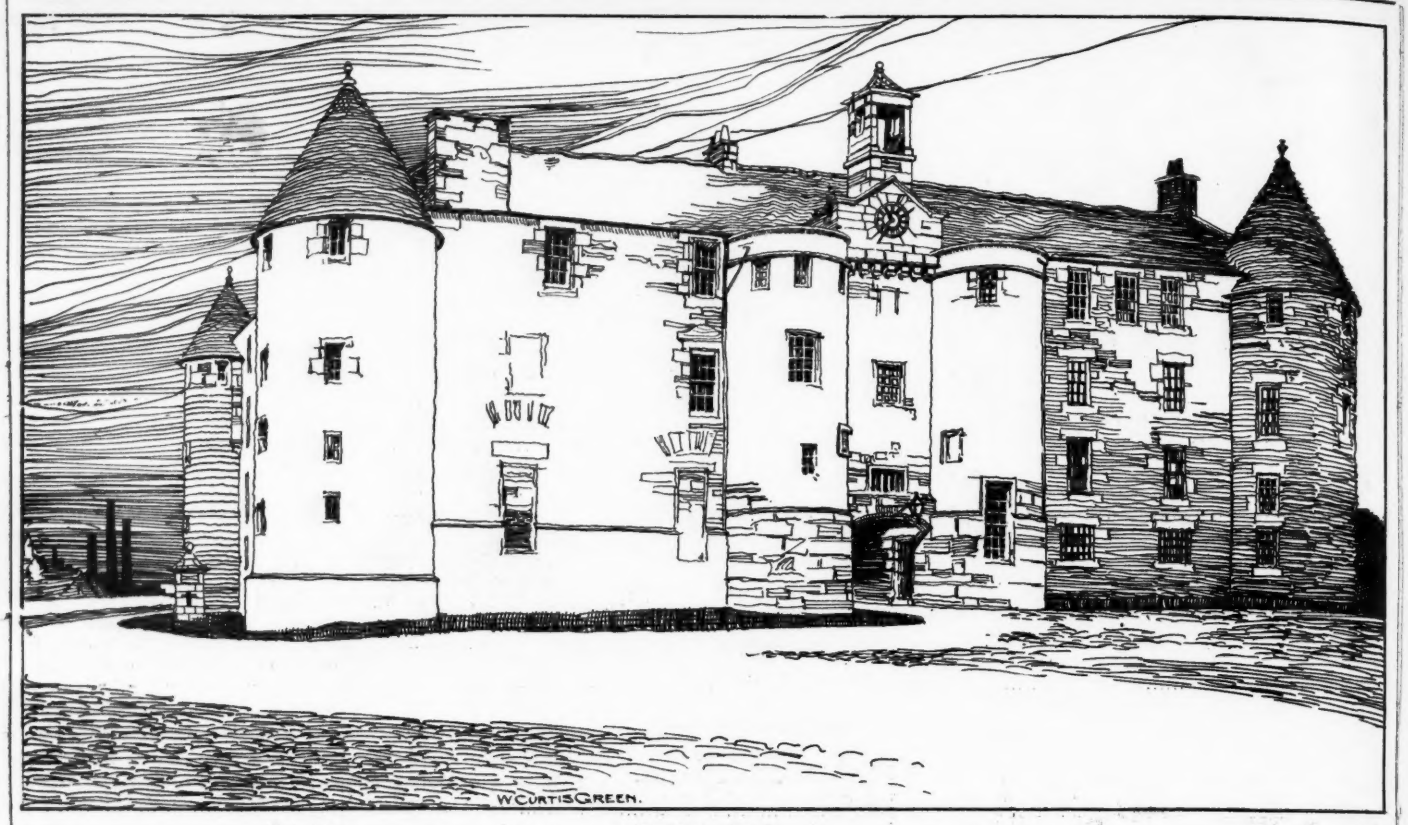
The Architecture of Our Large Provincial Towns.

XVII.—DUNDEE.

CONSIDERING the age, the historic importance and the present size and wealth of Dundee, it is disappointingly wanting in architectural interest. The want, it is true, may be accounted for, as far as old buildings are concerned, by the fact that its history is chiefly a record of sieges and savage destruction, with plunderings that left the inhabitants barely able to recover from the utmost depths of misery.

As to new buildings—well, it must be admitted that a great part of the modern city is taken up with huge jute factories and model dwellings; but, at the same time, if the building and rebuilding of principal streets which has gone on since the middle of this century had been carried out with more discrimination, Dundee might have been very different architecturally.

The place is said to derive its origin, as well as its name, from having grown up round the old church of St. Mary, which, according to tradition, was erected as a thank offering (or *Donum Deo*) about the end of the twelfth century by David, Earl of Huntingdon and Garioch, favourite brother of King William the Lion, on his landing in safety after a severe storm on his return from the Holy Land, whither he, with five hundred followers, had accompanied Richard Cœur de Lion in the third crusade. But *Dun-taw*—Tay Hill—seems a more likely derivation, while a very reasonable doubt is cast on the traditional origin by the fact that there seems to have been already a castle, or at least a fortified post, on the summit of the old Castle Rock, a precipitous eminence on the bank of the Firth, and further east than the old church; and, still more, if it is certain St. Mary's Church is meant, by the fact that the mediæval town did not extend further west than this rock; while the church was known even up to the seventeenth century as "the church in the field." The church, in one sense, may be said to exist yet, though whether any part even of the old steeple can be assigned to so early a date is more than doubtful; but the castle has disappeared, and a great part even of the rock has been cleared away in forming Castle-street. The stronghold was erected into a Royal residence by William the Lion, but was demolished about a century later, during the war of the Scottish Succession—tradition, of course, ascribes the act to Sir Wm. Wallace—to prevent its falling again into the hands of the English, who at that time twice took the town and sacked and burned it. It would seem, however, that Dundee was again in a prosperous condition in 1375, for it then paid the greater part of the ransom of 100,000 merks for the release of King David II.; and it is probably to about this period that the earlier work still to be seen in the "old steeple" may be assigned. The church of St. Mary the Virgin, of which the steeple was part, was burnt down in 1841, and the steeple has been refaced externally from bottom to top by Sir Gilbert Scott; but the interior of the ground story, which had a lofty arch opening into the nave, seems to point to two separate restorations—one in the fourteenth century which, above the plinth and bases, was more a rebuilding; and the second at about the end of that century, which dealt with the vaulting. The mouldings of the earlier work, and even the placing of the main shafts, and the bond, or lack of bond, in places, are exceedingly clumsy, and look almost like the work of an amateur; while the lierne vaulting and short vaulting shafts of the upper part were obviously designed by a mason fully conversant with the traditions as well as the niceties of his craft. The latter work may have been executed after the siege in 1385, when the town was again almost reduced to ashes, but appearances justify the suspicion that some incompetent workman, having built up to the springing and succeeded even in turning the plain arch, found the vaulting beyond his powers and was obliged, when too late, to send for some one who understood his business. The expert, whoever he was, wisely ignoring what had been already done, formed his own vaulting shafts in the corners of the tower and sprung his vault from them. The old tower is a lofty and massive structure, and although Sir Gilbert Scott is responsible for every stone one sees, except in the main doorway, the quaint design and detail and the evidence of two old pinnacles preserved in the (former) ringing chamber are eloquent of the fact that he followed very closely such remains as he found of the original and probably had their authority for almost all he did. The parapet and set-off beneath the present belfry stage inevitably suggest that they once marked the summit of the tower; while the low saddle-backed erection which shows over the upper parapet, and is really the chief thing that gives the old steeple its marked character, is admittedly a late addition. This erection is called the "Cape House"—the word is, no doubt, connected with *caput*—and is said to have been at one time used as a prison. It was, however, more probably a watch-house; it is provided with a fireplace, the remains of a stone chest or cupboard, and loopholes closed by wooden



Dudhope Castle.

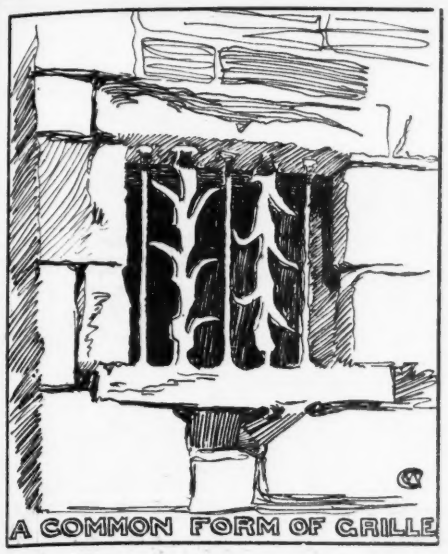
shutters on all sides. The tower was held against General Monk for three days in 1651 by the Governor of Dundee and a small garrison who, on their surrender, were barbarously massacred in the churchyard. The church, at some period between the Reformation and its destruction, had been divided into four by building up three of the arches at the crossing, and was used by four different congregations; and after the fire it was rebuilt, still in the old form externally, of nave, choir, and transepts, but as separate churches, called the town churches. The westernmost of these, nearest the steeple, is a mere barn-like structure without architectural pretension; and the others, though their windows are filled with elaborate flowing tracery, not ill designed as regards its main lines, and are provided with the usual trappings of Gothic architecture, cannot be considered as at all worthy appendages of the old tower.

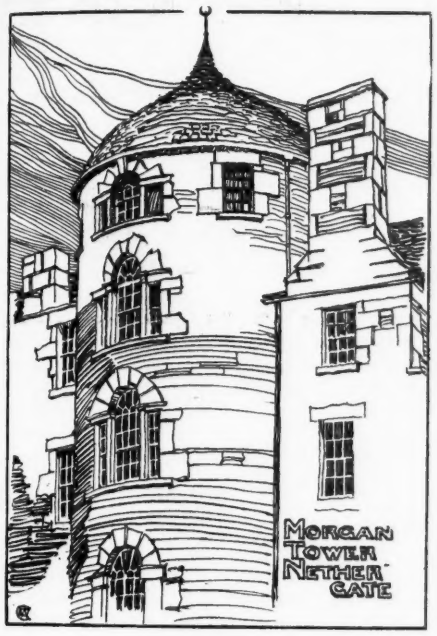
The fine situation of the town, referred to in the Queen's "Journal of our Life in the Highlands," is well seen from the gallery surrounding the "Cape House." It lies on the north side of the Firth of Tay, and, like so many others, on the southern slope of a hill with the river at its foot. The town of Newport is opposite, at the mouth of a wooded valley between the hills, and the promontory, on which Broughty Ferry lies, close by on the east.

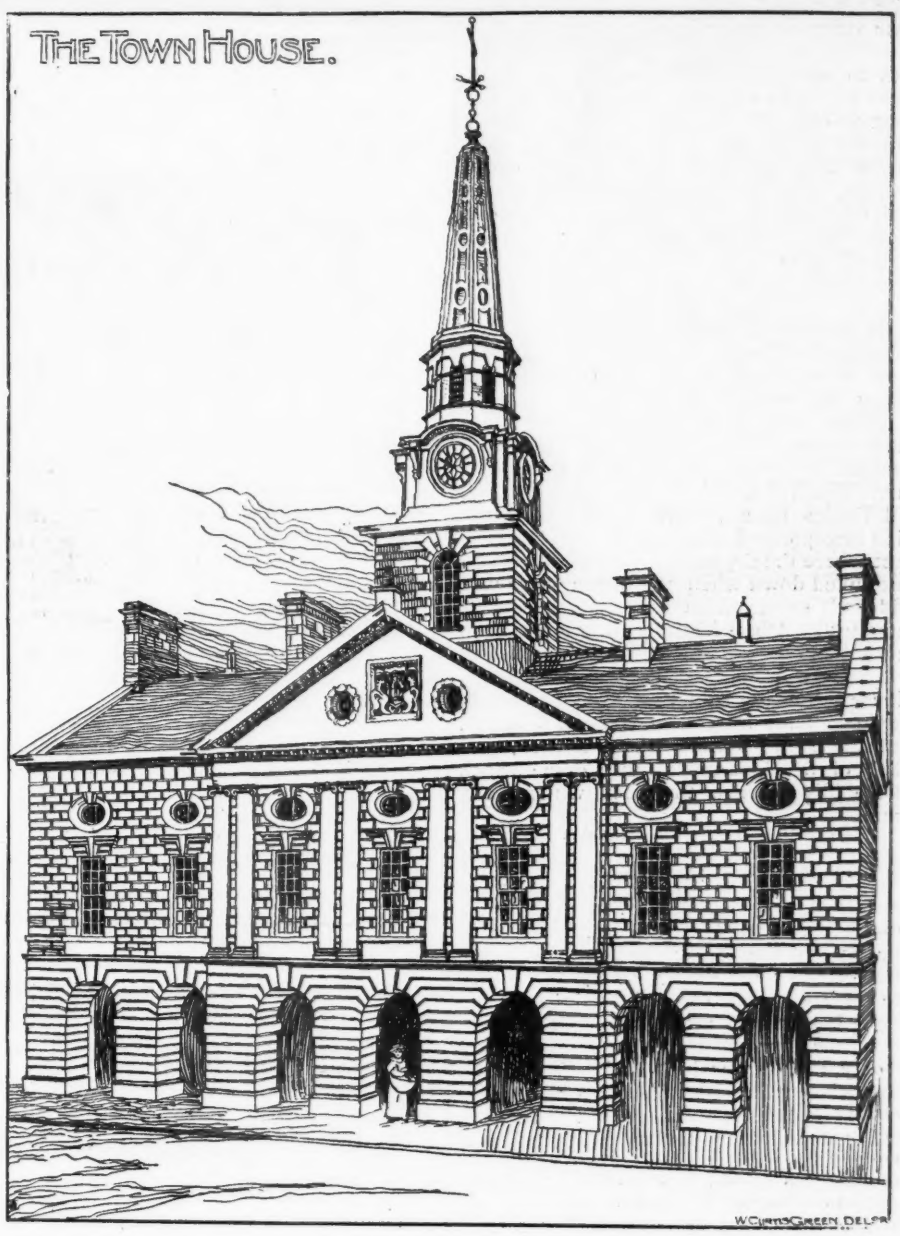
Until lately Dundee was shut in by the heights on the north, but it has crept round the west foot of "The Law," the principal eminence, to the village of Lochee, which is now included in the borough; encroached on its lower slopes, and even spread over the ridge on the east side of it. Some of the streets in these new quarters have rather steep gradients, but, as a rule, some skill has been used in laying them out to avoid this, and, although the result is much irregularity, that tends to a picturesqueness which is wanting in the individual buildings. Some indication of the rapid growth of the town may be gathered from the fact that in 1746, when it first began to recover from the effects of its latest disasters, famine and rebellion, the population was but 6,000, as against the 153,500, or thereabouts, of the present day; and a still better one, perhaps, from the description in Lewis's "Topographical Dictionary" (published in 1836) of the old Chapelshade Burial Ground, now as nearly as may be the geographical centre of the town, as being in its "vicinity."

In the churchyard are the remains of the old town cross, merely the much-decayed shaft of the cross itself, which, no doubt, once surmounted the usual octagonal shelter, with a small part remaining on one of its faces of the city arms. It originally stood opposite the old Tolbooth in the Seagate and afterwards in the High-street. The present cap and base, pedestal and crest are obviously modern. The only other architectural remains in Dundee that can, with some show of possibility, be supposed to have a mediæval origin are Dudhope Castle, the "Old Custom House," and the East Port, an old gateway at the east end of the Cowgate, in a rather unsavoury neighbourhood. It is but a low semi-circular archway in a rough stone wall with a plain roll on the outside arris and the jambs rebated, apparently for a gate, though no signs of hinges or fastenings remain, unless two recesses high up in the arch were for fixing the heads of cross-bars. Beside the arch on the north side is a loop-hole with a roomy recess on the inside, and this may have been repeated on the south side, but the wall is now pierced there for the footway and the loop-hole, if it existed, destroyed. The battlements are a restoration; they seem too thin to be any great protection, but the platform behind them is so narrow that the original ones can hardly have been more solid unless they were corbelled out on machicolations, for which there does not seem room between the crown of the arch and the platform. Each merlon has in the upper part of its face a tiny sinking of the shape of a keyhole upside down, like the outside of a small loophole for a crossbow, but the hole is not pierced through. There is no certain trace of any steps for access to the platform. The gateway was no doubt higher than at present, or rather the level of the roadway has risen. It is said, we do not know on what authority, that previous to 1548 the town was not enclosed within walls and that this, like the other gates, all now destroyed, merely formed a barrier at the end of the street, joining houses on either side. It owes its preservation less to any reverence for itself as a relic of antiquity than to respect for the memory of the heroic reformer Wishart, who preached from its summit in 1544 to the plague-stricken people assembled on the ground outside the town.

The remains of the Old Custom House, now scanty enough, look more like those of one of the strong palaces which succeeded the fortified castles of earlier times than anything mediæval. It was a large rectangular building, with a gable at each end and four circular turrets at the corners, and was certainly originally a residence, though used as the Custom House for about a century prior to the erection of the present one on the quay. An arcade, apparently purely decorative, ran round the base of the structure, the remains of which are now partly buried below the ground level. Its details are peculiar, but the arch mouldings and piers look more like a rough attempt to imitate classic details than anything else, and are very like those of a similar arcade on the inside of the west wall of the old burial ground called the Howff. Half the block and one of the turrets of the other half are now gone; the other turret has been shorn off by carrying the sloping roof of the main block over it, and the arches are cut about and decayed. In all likelihood it was never a beautiful building; it has now been so crippled and defaced that it is painful to look at, and will probably soon disappear. The present general appearance of Dudhope Castle would justify the supposition that it also is a relic of the early sixteenth century only; but it is known to have been very much altered more than once and, supposing that among those alterations was the formation of all the existing windows besides the razing of the main tower and the addition of a story which are recorded, the core of the walls may be of almost any age. It is now adapted for use as barracks, a bare and not very interesting-looking structure, L-shaped in plan, standing in a gravelled barrack-yard. Its position, however, just at the foot of "The Law" and overlooking the town and firth, is magnificent; and surrounded by its original gardens and park it would probably seem beautiful. On each of the external angles is a round tower with a conical roof, and the entrance archway in the middle of the east side is flanked by two smaller semicircular ones. This is the part which is said to have formed a square tower or kind of keep, with a watch-house on the top; at present there is but a low gable, with a clock in it, and a small bell turret. The window-jambs and heads had a large roll moulding on them,


A COMMON FORM OF GRILLE


MORGAN TOWER NETHER GATE



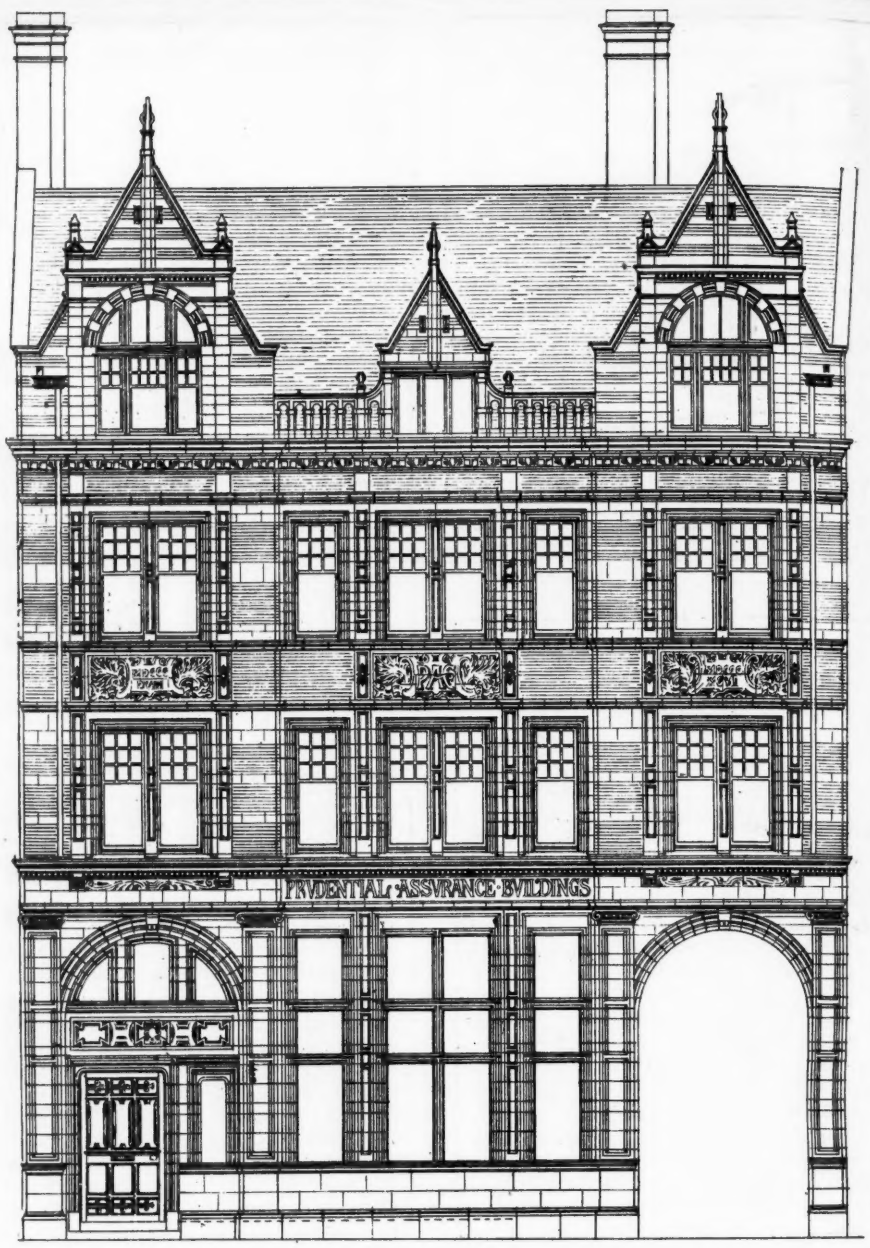
but this has been obliterated in many cases by the insertion of new stones with square arrises. Dudhope Castle is not properly a relic of the old town, from which it stood apart, but it was the seat of the Scrymseour, or Scrimgeour, family, hereditary Constables of Dundee and Standard-Bearers of Scotland, which became extinct in 1668, after which it was granted to Graham of Claverhouse, who fell at Killiecrankie, and then to the Douglas's.

Though mediæval architecture is scarce, modern improvements have not entirely effaced the Dundee of a rather later date, the relics of which are abundant enough in the back streets of the old quarter, and interesting as a whole if rarely so individually. The inhabitants of old Dundee lived in flats, even more universally than those of modern London ever will do, however far fashion may go in that direction. The flats were not luxurious; one, or at most two, rooms seems to have been the rule. But all the houses are of practically one type, a public passage from the street through the block to a staircase at the back which gave access to the upper floors, each of which was a separate tenement. The staircase was usually a winding one within a circular, octagonal, or, very rarely, square, turret projecting from the block of the building. The chimney stacks were generally built upon the front wall, in the middle of a gable, and flanked by the top story windows. These two features—the projecting staircase at the back and the chimney in the gable in front—are almost universal, and, it need hardly be said, have largely influenced the modern domestic architecture of the city. The material of the walls is rubble stone in large pieces, usually squared, but with thick mortar joints, the largest blocks being used for quoins and window dressings, often roughly tooled; and the roofs are covered with thick, dark-coloured slates. One can hardly call such buildings beautiful or even picturesque, but they are decidedly more pleasing than those to which they have had to give way in some of the main streets, with their tawdry pattern-book ornaments and their pride of fine joints and carefully-rubbed surfaces. In a corner of a small open space, south-west of the Town House, are the restored remains of a residence of greater pretension. It is called Strathmartin's Lodging, and is said to have belonged to the barons of that name; but its present tenants belong to a much lower stratum of society. The house stands back behind a little forecourt, overshadowed on one side by a small projecting building with a rather quaint gable. Its main feature is a large projecting octagonal stair turret—in this instance in front—with an ogee slated roof and an eliptical-headed entrance doorway, flanked by rusticated Ionic columns, and surmounted by an entablature and carved pediment, over which are three small niches in the wall with rough stones projecting in the form of canopies, and evidently once containing little figures. There is a little thing almost opposite to this house—whether old or not, or, if so, how old one cannot guess, and it does not much matter, but which most architects will notice—namely, an effective iron window grille, the alternate bars of which are merely old wheel tyres deeply jagged, an example of a good result obtained with the very simplest means. The building called Morgan's Castle, in the Nethergate, was, no doubt, once part of another residence of a superior kind, but of one which stood without the town in its own grounds. All that remains is a large round tower partly projecting over the footway, covered with a sharply-pointed ogee-shaped slated roof with flush eaves; it is five stories high, lighted by three-light windows, which may or may not be insertions of a later date than the walls. It is a picturesque object, but its history does not seem to be known. The whitewashed remains of a characteristic little round turret at the corner of the High-street and the Overgate is said to mark what was once another building of the better class; a house where the parents of the celebrated Anne, Duchess of Buccleugh and Monmouth, lived when they were driven from the Castle of Dalkeith by Cromwell's Commissioners, and where she was born; where also Monk resided after he had reduced the town; but the turret is well nigh all that remains of it.

Of much greater architectural interest is the Town House and Tolbooth, standing in what is here called the High-street, though in England we should probably call it the market-place. It was erected in 1734, according to an inscription in the pediment, and is a characteristic eighteenth century building by the elder Adam, having rather small parts and carefully studied details with a marked trend towards the elegant but rather emasculate delicacy developed in the work of his sons. The oval lights in the wings (see above) are shams, and the whole front is much spoiled by a thick coating of paint. The lofty stone turret and

spire are carried on the walls of the circular main staircase, which is built round a hollow newel and is a delightful piece of mediævalism to be found within such a shell. It gives access to a vaulted corridor on the first floor, at one end of which is the Guildhall and the other the council chamber, good rooms with panelled walls, deeply coved ceilings, and characteristic chimney pieces and door heads. The portraits of Scottish kings and Dundee worthies in modern stained glass that fill the windows are very good pieces of work, especially those in the Guildhall, which are, moreover, more in keeping with the architecture than those in the Council Chamber. The ground floor is occupied by an open arcade and shops, and the attics and basement by the prisoners' cells, now mostly used as muniment rooms. The iron gate of the condemned cell is worthy of praise as a specimen of skilful and laborious forging. The old Trades House, erected in 1770 by the nine incorporated trade guilds at about the spot where the Clydesdale Bank now stands, but pulled down when the Murray-gate was widened, seems, from the drawings of it hung in the Albert Institute galleries, to have been built to some extent in imitation, whether conscious or not, of the Town House; but the order had three-quarter single columns instead of coupled pilasters, and the centre feature was a lantern, probably of wood, surmounting a dome which rose oddly through the roof without any drum.

The Clydesdale Bank, by the late Mr. Spence, of Glasgow, which stands on a triangular site between the Murray-gate and Sea-gate, facing the end of High-street, is the most important and ornate new building in this part of the town; the large Corinthian pilaster order and deeply-carved frieze give the design a good deal of dignity and richness, but it is more careful and conscientious than interesting. The building is only two stories high, and, being on the slope of the hill, looks rather in a hole. It is not likely that the extra story which some local critics would like to see added to it would help very much, but the feeling that the structure is too low for its position is perfectly justified. Nearly opposite the bank, at the corner of Castle-street, a large new building is in course of erection, which promises to be a very excellent piece of architecture. The walls are only up to the level of the second floor, but the detail so far is extremely good; and if one may judge of the whole design by the rusticated basement, the large mullioned windows, and the commencement of a sturdy pilaster order, it should be a great success. In Reform-street, which runs northward from the High-street, opposite the Town House, the experiment has been made of treating the whole side of the street as one design, an experiment which has so often been unsuccessful that it seems almost foredoomed to failure—at any rate, in Great Britain—and even some foreign examples are not encouraging. Such a result is as curious as it is disappointing; theoretically, nothing should tend so much to breadth and grandeur; yet, to speak of breadth and grandeur in connection, say, with Regent-street or the Rue de Rivoli, would be absurd. And the late Mr. Burn, who designed Reform-street, was no more successful; the elegance and refinement of his details bear witness that he was a learned architect, and one cannot see that he neglected any opportunities for grouping, nor that the plainness of the work, which, no doubt, was enforced, or the present dirtiness and shabbiness of the fronts, make a great deal of difference; yet the result is simply dull, uninteresting monotony in which the better qualities one might expect are sunk and overwhelmed. The design is broken on the west side by the junction with Bank-street, at the corner of which is the branch office of the Bank of Scotland, the alterations to which were carried out by Mr. G. S. Aitken. It is a very passable



Prudential Assurance Buildings. (Messrs. Waterhouse & Son.)

piece of modern Renaissance work with a fancifully rusticated ground story and balconies, and pediments to the first-floor windows; it looks quite rich beside the severe simplicity of the rest of the street. The Kinnaird Concert Hall in Bank-street, by Mr. Charles Edward, has a plain but satisfactory two-storied front, with a pediment to the middle block. The patent office, next door, is tall, narrow, and ugly. A great part of the north side of the street is occupied by the offices of the *Dundee Advertiser* and other papers under the same able management; dignified, business-like buildings by Messrs. C. & L. Ower, of Dundee, neither too ornate nor excessively plain, and respectably, if not very interestingly, detailed. Reform-street ends in the open space called Meadowside, in and round which is grouped some of the most interesting architecture in Dundee, with the Albert Institute in the middle and the handsome old High School on the rise of the hill to the north.

The High School was designed by the late John Angus and built in 1833, when architects devoted their attention to the massing and general proportions of their work, and were content to borrow the best details they could find in a meek spirit of thankfulness and humble assurance that they could invent nothing so good. It was a poor-spirited attitude, with which we of the present day have no sympathy; but a comparison of the large, quiet simplicity and the breadth and refinement of such compositions as this, with the finicking fussiness of most more modern works, or the affected baldness and coarseness which seems the vogue of the present moment, always suggests the question, "How long will it be before our system enables us to produce a building that will approach this imitative architecture in impressiveness and grandeur?" Sir Gilbert Scott's Albert Institute is also, though in a less complete sense, imitative; and, although it suffers by a comparison with the High School, which their proximity renders unavoidable, it also has an attractiveness of its own, which perhaps would be greater if it had the advantages of size and situation possessed by the latter. It is not, however, one of Scott's most successful works; a certain degree of failure seems to be inseparable from attempts to fit mediæval ecclesiastical architecture to modern civil requirements; but it has picturesqueness and piquancy, and gives that satisfaction which every architect feels with work carried out with obvious care, sympathy, and knowledge. Like the Clydesdale Bank, it suffers a good deal from want of height, being on a comparativaly low site. The main block consists of a large hall, now used as a free public reading-room, built over a low story of offices, and approached by an imposing and picturesque external flight of steps, leading up to a rather weak porch at the first-floor level, which has the unfortunate effect of making the building look even lower than it is. The style is Early Gothic, with rather heavy buttresses, which at the angles carry little round turrets. The ends have stepped gables with circular windows in them, and the centre of the roof is surmounted

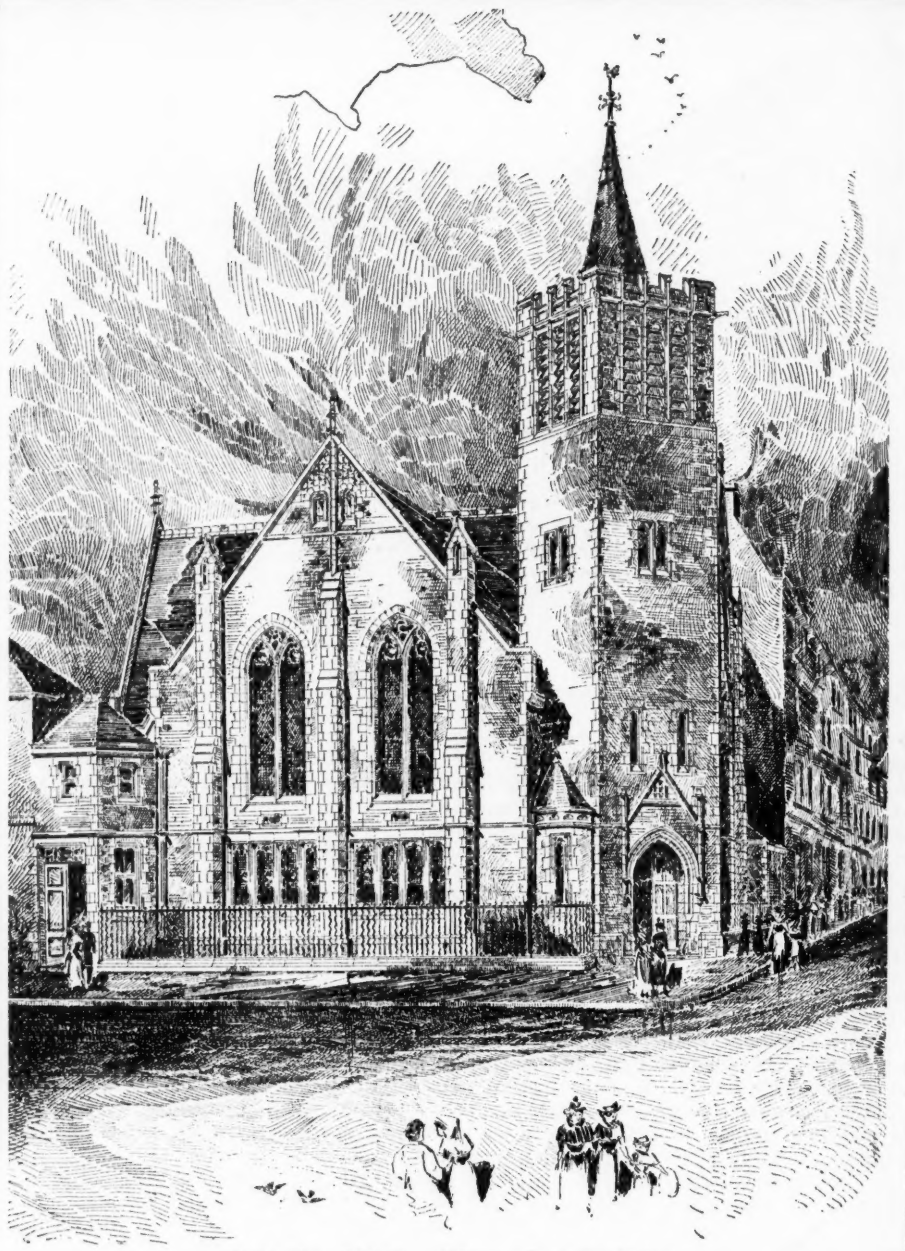
THE COURT HOUSE.

by a beautifully designed lead flèche surrounded by small female figures and running up to a sharp spire. The north side of the original building is less symmetrical than the front, but the large low octagonal tower behind the hall, with its circular roof, must have produced a very picturesque grouping before the rather muddled mass of buildings, with its ugly skylights, was added on the east. Most of the details of this addition are conscientiously copied from the original, but the angle turrets have been thinned and spoiled, and there are two smaller flèches which quarrel with the original one, and some absurd spreading finials. Notwithstanding their faults, however, it cannot be said that the additions are out of keeping with, or altogether unworthy of, the original, and Mr. Alexander, the city architect, is to be congratulated on not having failed to a far greater extent in a difficult task. The interior of the large reading-room has a wooden barrel vault rising from a heavy stone cornice and carried on carved principals. The east addition is used as a museum and picture gallery, and contains collections of casts, natural history specimens, jute products and curiosities, and a small number of pictures. The most interesting curiosity is the remains of an ancient "dug-out" canoe found in the sand on the banks of the Tay. In front of the main entrance to the Institute is a well-designed stone fountain, with black and red polished granite introduced; the details are more French than English, but they are well executed, and the wet surface of the dark stone sparkles in harmony with the polished granite, so that together they make a very pleasant mingling of colours. There are three statues also in the ground round the building, none of which are remarkable, while the strained, uncomfortable attitude of one of them, that representing Burns, is rather painful to look at. In the rich front of the Eastern Club, facing the south side of the Institute, its architects, Messrs. Pilkington & Bell, of Edinburgh, in trying to design up to its name, have attempted to obtain an oriental aspect by modifications of Renaissance detail in the direction of the outlandish and grotesque, and by executing the carving in a sort of pseudo-Romanesque. The Prudential Assurance offices, by Messrs. A. Waterhouse & Son, are at the east end of the square, and bear the date 1896. Their front is chiefly built of the dull red bricks that seem inevitable, even in towns where stone is the usual and natural material, with a red stone ground story, and bands, and dressings. The design is quiet and pleasing, with panelled pilaster strips flanking the windows, a good cornice, gables to the side bays, and a small dormer between them. The Caledonian Insurance office, next door, has a large gable surmounting two bay windows with quadrant corners, and connected at the top by a balcony with a lace-like pierced parapet. Facing the north side of the Institute is the Exchange or Merchants' House, designed by the late D. Bryce of Edinburgh, and finished in 1856; another modern Gothic hall, built over a floor of offices and also used as a reading-room, though by subscribers only. The external design is unusual, consisting of a series of square-headed mullioned windows, very high in proportion to their width, flanked by projecting banded shafts borne on corbels, and supporting very large grotesque gargoyles, which serve to carry the vertical lines through the cornice, and connect them with the piers and buttresses of elaborate traceried dormer windows. The heavy tower at the corner, which was to have been finished with a crown on the summit, similar to the one at Oudenarde, has been left incomplete owing to the insecurity of the foundations. The roof of the great hall is somewhat elaborate, and the dormers are filled with good stained glass. Adjoining this building on the west is the Merchants' Shelter, or the Exchange proper, where the merchants are supposed to meet; it is internally merely a long, low, rather bare room with seats against the walls and is usually unoccupied, the merchants preferring apparently to do business at their offices, or standing about in the High-street in front of the Town House. The street front is a very neat, quiet little composition with plain, well-proportioned mullioned windows and a traceried parapet broken by three gables over the doors. Next to this again, at the corner opposite the High School, is a Congregational Church, a small building of rather squat proportions with a wheel window in the main gable and low octagonal flanking turrets. The only other building of any note in the square is the old Post Office, a respectable little bit of old-fashioned Renaissance architecture, not very interesting nor very beautiful, but quiet, correct, and inoffensive.

Very different is the now nearly complete, imposing, and elaborate new Post Office at the corner of Ward-road and Constitution-road, by Mr. W. Robertson, of the Board of Works in Edinburgh, with its multiplication of detail, its columns and pilasters, strings and cornices, square windows and circular-headed windows, dormers, domes, turrets and vases, carving and sculpture, and many other contents of the architectural larder poured into the pot and flavoured with just enough Italian Renaissance sauce to satisfy the public palate. The new red stone Baptist Church, a little further along Ward-road, is a more satisfactory design, though the front to the street is little more than one broad two-storied bay window, projecting in very flat lines, under a plain gable. Next to it are the plain but architecturally satisfactory offices of the Dundee Water Commission; the long, low front built in grey stone, with red stone dressings, and broken by three symmetrically-disposed gables, under each of which is an oriel window. Beyond this again is what appears to be a gymnasium, the front of which has high roofs and details of the François I. style, and is surmounted by a little turret bearing a figure, apparently of Fame; it is admirably grouped, but somewhat weak in its details. The Wesleyan Church opposite, and the Baptist Church up the side street are buildings of no great pretension with Early Gothic details. In Court House-square is the now abandoned industrial school, a plain building with rather sharply-pointed gables and a small tower. The Court House, facing the top of the square, is after the High School, to which it bears a strong resemblance in its grouping, the most imposing and dignified building in the town. It was designed by the late W. Scott, of Dundee, and has a long front with a large centre block, connected to smaller end ones by what are really screens, pierced with gateways and masking the irregular buildings of the prison in the rear. The middle and end blocks are treated with a sturdy Tuscan pilaster order running through the two stories and mounted on a high base; the screens with capless piers and a frieze and cornice. In the middle of the centre block there is a projecting pedimented portico of four columns, reached by flights of steps. The stable and solid appearance of the building is somewhat marred by the fact that the upper windows have arched heads. Nothing is to be seen of the prison in rear of the Court House beyond the high blank wall in the Lochee-road. The front of the Curr Night Refuge in Bell-street is a not very satisfactory composition of four stories, the top one being lighted by oval windows in round-headed dormers surmounting a weak cornice. The principal ornamental feature is the projecting doorway flanked by little piers and columns supporting an arch under a cornice and pediment. In the tympanum of the arch is a bas-relief representing children welcomed at the institution. Beyond this, at the corner of Constitution-road, are three churches, of which the newest, the U.P. Church on the west side, though not at all ecclesiastical looking and very plain, is a pleasing piece of work. It is a simple rectangular block with slightly projecting angle pavilions, treated with a rusticated ground story and shallow piers with small caps and bases carrying an entablature with a sufficient cornice and a balustrade broken by a sort of attic in the middle of each front. The Girls' School, facing the west end of the old High School (Mr. Fairley, of Dundee) is an important new building, but remarkably weak and thin looking considering the pains which have evidently been taken to make it effective. The two, almost equal, fronts are broken up by scarcely visible projections of only four or five inches, and the cornice is only of about the same depth as the string at the first floor level; indeed, all the features and projections, reveals, and so on, are small and nearly of a size; so that there is no depth and no emphasis anywhere except in the doorway, which is set back behind a couple of small columns just enough to give a little shadow. Behind the High School, in Bell-street, is a very neat, if not elaborate, new red stone block of offices and shops; and turning down into Meadow-side again, just behind the Exchange, one comes to the very ornate and rather fantastic, unfinished Pearl Insurance Buildings, by Messrs. C. & L. Ower, also in red stone, the front broken up at the top by two much be-crocketed dormers of different sizes and a tower with heavy angle pinnacles. In Pan-

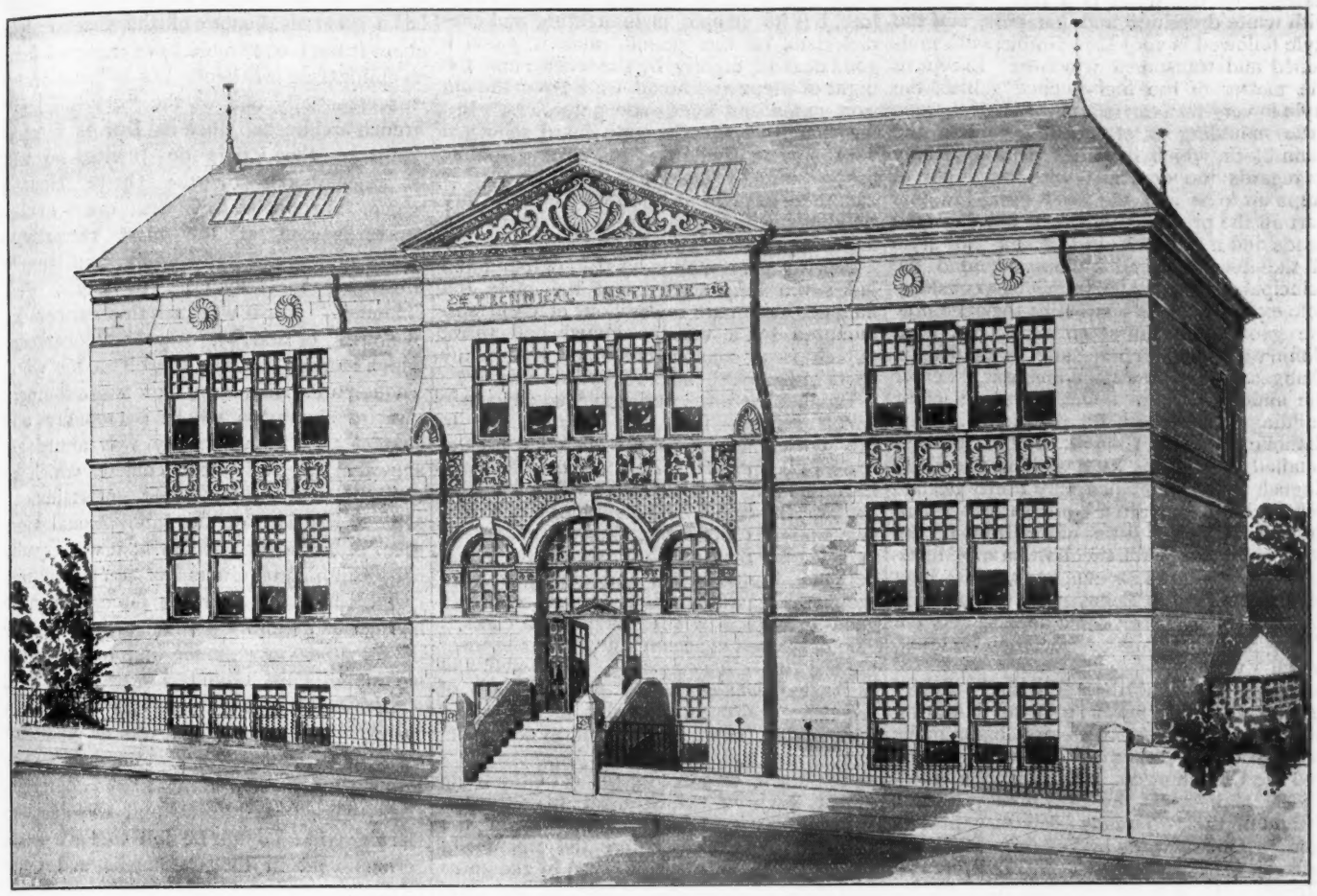
mure-street, close by, there is the block of offices occupied by the North British Mercantile Insurance and National Telephone Companies, which possesses some architectural importance in virtue of a large cornice and an order of three-quarter Corinthian columns.

Commercial-street, which runs south from Meadowside, might be quoted as another example of an attempt to treat a street as one complete architectural design, if there were really any design in it. It is, however, only so many yards of pattern-book architecture, a mere medley of tawdry ornaments, the sort of thing that might be expected from one of the gentlemen who build rows of twenty pound houses in the suburbs if he had to deal with an important street in the middle of a town. We understand that the Burgh Engineer is responsible for the design of this and Whitehall-street, which is very similar. If that is so, every one capable of judging architectural design must regret that a man who is probably exceptionally capable (he would hardly be Burgh Engineer of Dundee if he were not) should have committed such an error of judgment as to attempt work for which his training and experience obviously had not fitted him; it is heartbreaking to see two of the principal streets of a great city reduced to such a vulgar level. At the first turning on the left in passing down Commercial-street is the Murraygate, in which the only building worthy of note is the British Linen Company's Bank, we believe by Messrs. Peddie & Kinnear, a simple composition with a good crowning cornice, and in which some interest has been obtained by spacing the windows carefully and emphasising the middle one. On the other side, just beyond the Clydesdale Bank, and really in the Seagate, though best seen from Commercial-street, is Sir Gilbert Scott's St. Paul's Episcopal Church, one of the only two really good examples of modern Gothic in Dundee. The interior consists of a nave of five bays with lofty arcades and aisles and no clearstory, transepts, a short choir with an apsidal end, and a spacious vaulted porch under the tower. The nave, aisles, and transepts have open trussed rafter roofs, but the choir is vaulted in stone. There is one fairly good stained-glass window, a number of very bad ones, and a stone reredos with a large mosaic picture in it. The church stands well, on a part of the old castle rock, twenty-six steps above the street level, but is much built in. Its great feature externally is the fine steeple, consisting of a simple broach spire with small pinnacles at the foot rising from behind the traceried parapet of a large and lofty tower. The tower has a set-off and second parapet below the belfry windows, an arrangement evidently suggested by the old steeple in the Nethergate; and it has also a somewhat similar stair-turret and short buttresses; the mouldings, crockets, and other carved ornaments are, however, much more normal and less interesting and picturesque than those of the old tower. The aisle windows run up into sharply pointed gables, which break the line of the roof, an arrangement the beauty of which is always questionable; they are, however, of fine lofty proportions, and filled with well-designed Decorated tracery. The plain, rather coarse, two-storied building beside the church, with shops under it, is no doubt the church school, but is not at all worthy, architecturally, to have any connexion with Sir Gilbert Scott's work. To the left, a little way down the Seagate, is the theatre, by Mr. W. Alexander, of Dundee. Its front is a good ordinary piece of work in the style of a Florentine palace, the pleasantest features being plenty of wall space over the upper windows and a good cornice; more care, however, might have been bestowed with advantage on the balcony over the entrance and the consoles that support it. Nearly opposite is a large unfinished building in red stone by Messrs. Johnson & Baxter, very plain for the most part, but



Park U.P. Church. (Messrs. C. & L. Ower.)

broken up in front by two pairs of false turrets, carried on corbels and flanking two gables; the spaces between are finished with a cornice and crenellated parapet, and a large dormer forms the middle feature. There is little else to notice in the Seagate, except a pretty old wrought-iron lamp holder over the gateway to the courtyard of some little old houses. Commercial-street ends in Dock-street and the quays, at the point where the old Exchange, now the City Assembly Rooms, is situated. This is a quiet old-fashioned building with an accurately-proportioned Grecian Ionic order of antæ to the upper floor. The principal front, to the west, facing the open space called Shore-terrace, has importance given to it by planting columns in front of the antæ at either end and breaking the entablature forward over them. The interest of this quarter of the town centres in the so-called Royal Arch, which stands at the end of the quay between two of the docks and was erected in memory of the Queen's visit to Dundee in 1844, from the design of the late Mr. Rockhead, of Edinburgh. It would be one of the easiest things in the world to ridicule it. As a serious work it is an absurdity, bad in design and detail, and not at all a worthy memorial of an historic event; but as a piece of mere scenery it is, as the local guide-book quite happily puts it, "rather imposing." It is, perhaps, necessary to mention that it is a solid stone structure, and not merely painted wood and stucco as one is apt to gather from an illustration of it. What makes it imposing is probably partly its size, exaggerated as this is by its standing alone, and partly the richness imparted to it by its interlacing arcades and chevron mouldings. It is really a great pity that the detail is not better carried out; the orders of mouldings in the large arches are too small; the depth under the arcades is too little; the string-courses are too thin, and all the coping and cornice mouldings resemble those of the fifteenth rather than those of the twelfth century; and what is perhaps as regrettable as anything is that the stones have smooth rubbed surfaces and very fine joints, a treatment that, more than anything, gives an unreal appearance to what professes to recall the rough work of the Normans. There are upon the arch, however, two admirably designed and beautifully carved coats of arms, the Royal arms on one side, and those of the city on the other. In East Dock-street the most important building is the Custom House, a satisfactory composition, if not very original, carefully thought out and well detailed. The ground story is rusticated, the upper part has a portico of four Ionic columns in the middle, the windows on each side are carefully grouped, with the centre one marked by richer treatment, and there is a good strong cornice to crown the whole, with a pediment over the portico. Of less important structures near it there are the little Sailors' Reading-room which is picturesque; the Maritime-buildings, opposite the Arbroath Railway Station, by Messrs. James Maclaren & Son, which though weak and thin in their details are fairly satisfactory; the Sailors' Home, by Messrs. Ireland & Maclaren, a



Technical Institute. (Mr. J. Murray Robertson.)

lofty and very ornate edifice; and a little two-story office building of good general character further west. There are some rather startling new shop premises in Crichton-street, built of red brick with a mingling of yellow and blue; the bracketed-out wooden cornice at the second floor level, the arches above it with round wooden bay windows in them, the large cornice and curved gable make an over-busy composition but the touch of bright colour in the monotonous grey of the street is pleasant. The effective main front of the Gilfillan Memorial Church, designed by Mr. Malcolm Stark, of Glasgow, faces the bottom of Whitehall-street; the projecting central part has a rusticated ground story in which the entrance is set within a bold arched recess, and a large semi-circular-headed window to the upper floor; the wings have shop-fronts on the ground story and windows similar to those of the town house above; the whole is crowned by an entablature and cornice carried by shallow Ionic pilasters and broken by an ogee pediment, too high in proportion, over the centre. There is a well-designed wooden turret on the roof, flanked by pinnacles which serve to carry up the main lines of the building. The Caledonian Railway Station, by Mr. Thos. Barr, C.E., of Perth, represents an unsuccessful effort in the so-called Scottish Baronial style, and has stepped gables and a heavy clock tower. Returning from this point to the High-street one passes, in Union-street, the remains of what seems to have been a good house front in the Adams style.

The architecture of the Nethergate west of the old steeple is not very interesting. St. Paul's Free Church, St. Enoch's Established Church, by Messrs. Edwards & Robertson, and the Roman Catholic Pro-Cathedral are all Gothic Revival buildings, the first and last of the kind known as "churchwarden" Gothic; St. Enoch's is rather later in date and rather better in detail, but of no great merit. The Queen's Hotel, by Messrs. Young & Meldrum, is also as Gothic as pointed arches to the windows, recessed jambs with little columns in them, and wooden barge-boards to the dormers can make it. A block of shops in red stone next to St. Enoch's Church is rather less unsatisfactory, but the lines of the gables are weak, and the piercing of the balcony fronts is too small and lace-like to tell when seen from the street level. Not long ago the region about the end of the Nethergate was the chief residential quarter, and there are still a few little old houses remaining with old iron railings in front that look very reposeful. In Smalls Wynd, at the beginning of the Perth-road, is the New Technical Institute, by Mr. J. Murray Robertson; it is a plain rectangular, business-like structure, with a small cornice and central pediment, the windows concentrated in three groups and the lower ones connected with the upper by panels filled, in the middle group by carving, and in the others by strap-work which is much too small in scale. The best bit of detail about the building is the pretty light iron railing in front of it. In the Perth-road are several modern Gothic churches which force themselves upon one's attention. St. John's Free Church, by Mr. James Hutton, has a lofty tower and spire; St. Mark's Established Church, by Messrs. Pilkington & Bell, has many gables, much rich carving, and also a spire; the Rye Hill U. P. Church, by Mr. G. S. Aitken, is in a round arched style and has a tower surmounted by a dome and lantern; and the Cheyne Memorial Church is very similar to St. Mark's, and by the same architects. St. Peter's Free Church, in one of the side streets, though in itself a very plain barn-like edifice, has an old tower which is not altogether without interest. On the south side of the Perth-road, in Magdalen Yard-road, opposite the end of Greenfield-place, there is a simple little one-story house that has apparently seen better days, but is still charming; it is carefully designed, with projecting wings and a little central wooden porch overlooked by a broad dormer. And at the bottom of the same street, opposite Magdalen-green and the Tay Bridge, there is an exceedingly pretty villa of the Greek revival period standing in an equally pretty garden, and looking very comfortable as well as being a scholarly little piece of architecture. The district north of the Perth-road, as far as the Lochee-road is a manufacturing quarter which does not boast of many buildings of architectural character. But we may mention the Hawkhill Schools by Mr. James Langlands, a structure of the lofty, square, solid, and useful-looking form favoured in Scotland for public elementary schools; a small but pleasing modern Gothic church in Blinshall-street; a small factory in the lower part of Blackness-road; and the Logie Church Hall in Scott-street. In the Lochee-road there is a new factory at the corner of Douglas-street, which deserves to be mentioned as something better than average factory architecture, and the Dudhope Free Church, a rather curious but not displeasing composition in round arched Gothic, with the principal windows set back behind a plane of tracery which would be more effective if fuller. The new church in reddish stone at the corner of Union-place, almost in Lochee, is perhaps a rather better specimen of modern Gothic work than most of those in the town, but cannot be considered quite successful. The library and baths, by Mr. J. Murray Robertson, in Lochee itself is, however, one of the most satisfactory new buildings we have noticed. It is small, and by no means ornate, but its sobriety and restraint contrasts pleasantly with the ambitious fussiness that often characterises buildings of the sort, and such detail and ornament as there is is good. Close to this is St. Mary's Catholic Church, by Mr. Goldie, which has a remarkable and effective east end, consisting of an octagonal building of chapter house form with very high windows.

The most important building between the Lochee-road and Constitution-road not yet noticed is the Royal Infirmary, designed by Messrs. Coe & Godwin. It stands in a commanding position on the slope of the Law-hill, overlooking the town and Firth, and is a clever and impressive, if not particularly beautiful structure. Its long front is broken by a massive-looking square block in the middle, flanked by well-proportioned turrets, and by gabled projections in the wings. The

material of the walls is a rich red stone with white dressings and parapets, and the style followed is very Late Gothic, with mullioned and transomed windows. Except in the matter of the high-pitched gables, the style is very well carried out, though there is little moulding or ornament except in the main block, which is rather rich, especially as regards the doorway, with the flight of steps up to it and the oriel over. In this part all the principal windows have cusped heads and a little tracery in them. The style of the new detached buildings behind the principal one is imitated from it to a considerable extent, but it is instructive to notice how the good architectural character has been eliminated by superficially unimportant changes. In Dudhope-crescent, nearer the middle of the town, are some minor buildings that may be mentioned. The Catholic Apostolic Church at the corner is detailed with some little skill in the Early English style, and has a very pretty flèche; and further down are a United Presbyterian church, and a neat little office front on the other side. Towards the bottom of Constitution-road are the savings bank, which may be described as a Renaissance composition dressed up in Late Gothic details, and the Young Men's Christian Association building, which would be satisfactory but for its large grotesque dormer with its square dome. In the lower part of Hilltown, St. James' Church, with its high gable and rich turret, makes a picturesque group; and the Church of St. Salvador in Church-street, Main-street, by Mr. Bodley, is the second of the two really good examples of modern Gothic work in Dundee, which we referred to in speaking of St. Paul's Episcopal Church. It is a far less important edifice and comparatively plain, but the Decorated detail both of the mouldings and tracery is what might be expected, and the plan of the building, with a narthex and the aisles constructed in the thickness of the buttresses, shows its architect's well-known knowledge and skill. In Victoria-road the Victoria Calendering Company's works may be noticed as well as the Trinity C.U. Church; and in Victoria-street the U.P. Church and the Wallacetown Parish Church; the latter in round-arched Gothic style, with a large square tower, the belfry of which seems to be a recent rebuilding, and is far from being an improvement.

The "Morgan Hospital" (Messrs. Peddie & Kinnear)—really a charity school—is the principal public building in the north-west part of the town, and an extravagantly enriched piece of work considering its purpose. The "Scottish Baronial" style has, no doubt, inspired the architecture generally, but it can hardly have given any excuse for a good deal of the rather tawdry ornament. It is a building of two stories, with a massive tower in the middle of the main front, against which two stepped gables crowd up in an affectionate but undignified way. The chimneys in the other gables are a curious survival of an old Dundee feature referred to on a previous page. The new Roman Catholic Church in Albert-street, by Mr. T. M. Cappon, now approaching completion, is a work of a different stamp, and will be an ornament to the town and a third example of good Modern Gothic. It is built of coursed rubble, with ashlar quoins and dressings, all of a red colour, and consists of a nave with a small flush transept, small sanctuary, two low, shallow chapels on each side, and a tower with a quaint and picturesque belfry stage. The proportion and details throughout are excellent. The Baxter Park Free Church in the Arbroath-road, by Mr. A. Johnson, is not so good; but it has a well-proportioned tower and spire, and, except as regards the tracery of the great rose window, which is too thin, and the cusping in the heads or the buttresses, the detail is adequate. Nearer to the centre of the town there is the old church of St. Andrew at the west end of King-street, built, according to the inscription on it, in 1772, and designed by the elder Adam; it is rather a barn-like structure, but its steeple is interesting and characteristic of the period, and it gains a good deal of dignity by the terrace and the flight of steps and broad walk from the old iron gates and handsome gate piers. Not far from it is the Cowgate Board school, a very similar building to several public schools already described. A little further east there are two or three very large factory buildings, which size, and especially height, make impressive. One in St. Roque's-lane is especially so; it stands on rising ground and has seven lofty stories, and the gable end flanked by square towers, one of them surmounted by a wooden-domed bell turret (which is a conspicuous object from many parts of Dundee), looks really majestic.

Dundee has three parks, and an esplanade which reaches from the Tay Bridge to the docks, which is the popular promenade. Balgay Hill Park is on the west, Barrack Park on the north side, and Baxter Park on the east. The last-named is extensive and has been beautifully laid out, it is said, by Sir Joseph Paxton. Its Elizabethan entrance lodges and gate piers, and the classic pavilion in it, are also exceedingly good examples of their respective classes. The only open spaces really within the town are the two old cemeteries, the Howff and the Chapelshade burial ground, both of which are laid out with walks and provided with seats. The former is said to derive its name from having been used for many years as the howff, or meeting place, of the trade guilds, each of which used to assemble round some particular monument in the cemetery in the days before the erection of the Trades' Hall. It was given to the town as a burial place by Mary, Queen of Scots, and is said to have been before that the site of a Franciscan Convent, one of the three monastic institutions of Dundee, of none of which is much recorded beyond the fact that they existed.*

* This series of illustrated articles was begun in our issue of September 26, 1896. A list of those towns already dealt with, and particulars of future arrangements, will be found on page xviii.

NOTES.

M. Charles Garnier.

The death of M. Charles Garnier, which is chronicled under our obituary heading on another page, removes from the architectural world one who was not only an eminent architect but a very characteristic and original personality. Among the eminent French architects of the day he in some respects stood alone. Though a pupil of the École des Beaux-Arts, and a "Prix de Rome" man, his work showed none of the merely scholastic or academic tendencies which that academical education has rather tended to impress even on architects of genius. His great work, the Paris Opera House, though what way be called a classical building, is an architectural conception of remarkable freedom and originality both in general design and in detail. If, however, his native vigour and originality enabled him to escape the vices incident to academical training, he also fell short of some of its virtues. He was a curious contrast to such a typical scholastic architect as Baltard, whom (as noted in our obituary record) he succeeded at the Academie des Beaux Arts. Baltard represented the old school of severity and refinement of design. Garnier represented nothing but himself; and, with all his originality, he would have been the better for a little more of the traditional severity of French classical training. The want of reserve, the too great *bravura* of style, is the defect of the Opera House, and this characteristic is still more marked in the Monte Carlo Casino, which has a great deal more of the Casino style about it than one would have expected from so eminent an architect. But in fact Garnier was essentially one of the "one-building" French architects. Just as Duc is remembered by the Palais de Justice, he will be remembered by the Opera House; which, in spite of its over-exuberance, is one of the most remarkable works of modern architecture, and happily illustrates the saying, "le Style, c'est l'Homme." For it was just this exuberance of spirits, of activity, of general character, which marked the man as well as his work. Though a Parisian born, there was a southern vivacity about his whole personality and character. His versatility was amusingly shown in the lively little comedy which he wrote for the after-dinner entertainment, some years ago, of the International Congress of Architects at Paris; it was equally shown in his ubiquitous work on committees of all kinds, for after his fame was made he became a kind of general artistic adviser both to the Government and to the municipality of Paris, and few artistic schemes were undertaken without his advice and concurrence. This, no doubt, was as creditable to the French officials as to himself. The French Government know how to appreciate their eminent architects, and the death of Garnier will no doubt be felt to have left a serious void in their Councils and Committees.

The Wallace Gallery, Manchester-square.

In Committee on Supply the House of Commons have passed a vote to complete the sum of 5,927*l.* for the Wallace Gallery, hitherto known as Hertford House, Manchester-square. No rent will be paid for the premises, of which the estimated cost for maintenance during the present year is 300*l.* The estimated cost of the building, including the extensive alterations now in progress, is 109,000*l.* Of that aggregate a sum of 80,000*l.* was voted last year, and another sum of 25,000*l.* the current year, leaving 4,000*l.* to be provided hereafter. The house was built by Sir Richard Wallace, Bart. (*obiit* 1890), for the fine-art collections gathered by him and the fourth Marquis of Hertford (who died, unmarried, in 1870), on the site of Manchester House, erected in 1776-88 for George, fourth Duke of Manchester. On the Duke's death the house became the residence of the Spanish Ambassador, who built the adjacent Roman Catholic Chapel in Spanish-place,* and then of the second Marquis of Hertford, being, it is believed, the original of the Gaunt House of "Vanity Fair." The third Marquis was also a well-known collector, his successor bequeathed nearly everything to Sir Richard Wallace, who in turn made Lady Wallace his sole legatee, their only child, a son, having died in 1887. Lady Wallace died in February, 1897.

* Rebuilt after the designs of Messrs. Goldie, Child, & Goldie. See two views of the interior, in the *Builder*, October 12, 1895.

Electrical Exhibition at Como.

In order to celebrate the centenary of the discovery of the primary battery by Alessandro Volta, an international electrical exhibition will be held in his native city of Como next year. As Volta was not only the first discoverer of "voltaic" or current electricity, but also developed the theory of it along purely physical lines, he can be regarded as the

founder of the modern science of electricity. The exhibition will be historical in character, and will review the progress made in the science during this century; but in addition all the latest developments of industrial electricity will be shown, and a special feature will be made of electrically-driven machines and tools employed in the Como silk industry. It will open on May 15, 1899, and will last for five months. Manufacturers of every kind of electrical apparatus are invited to exhibit. As Volta is one of the sclentific worthies whom every one delights to honour, and as Como is beautifully situated on the lake which bears its name, this exhibition will, doubtless, attract people, especially physicists and engineers, from all parts of the world.

Medical Officers of Health.

FROM reports in various local papers in regard to the salaries of Medical Officers of Health, we are inclined to think that these officials are very often much underpaid. We are not surprised at this, since many Local Authorities would be content to do next to nothing in regard to sanitary matters if it were not from the pressure of the Local Government Board. Some of these local bodies, therefore, practically pay their medical officers what is a merely nominal salary. It is not to be expected that really good work will be done by men who are underpaid. We have no doubt that in many districts, if medical officers were better paid, there would be a much higher level of sanitation. It is also a matter of some doubt, however, whether it is desirable for Medical Officers of Health to be general practitioners in their district. Probably the work would be done much more independently if a medical officer always had a considerable area under his jurisdiction and did not take private practice at all.

Pumice Bricks.

FOR many years a brick made chiefly of pumice in small pieces cemented together has been in use in that part of Germany bordering the Rhine, and we now notice that it has found its way to England. The pumice is the product of some ancient Tertiary volcanoes situated for the most part near Andernach and the Laacher See. The sections as seen in the various pits show the pumice to be in pieces varying in size from mere grains to lumps some 4 in. across. It occurs in layers, but is frequently interrupted by small lenticular patches of more solid fragments of lava. The bricks are made from screened pumice, the larger pieces being broken to pass through a sieve having about ½-in. meshes. These screened pieces are then covered by a thin coating of cement, and the brick is moulded. It will be observed that the cement is not mixed with the pumice so as to form solid cement blocks; but by the fragments being coated first, the brick is obtained by these coatings adhering to one another. The result is a very light and vesicular brick. Although used largely even for exterior walls in Germany, it is not very strong. These bricks seem specially adapted for light partition walls, for which purpose they are now being used in this country.

Moulded Marble Experiments.

THE experiments connected with the moulding of marble by pressure, conducted by Professors Adams and Nicholson at McGill University, Montreal, seem to be highly successful. Carrara marble was principally operated upon, and this was confined in specially-prepared steel and iron tubes having an accurately-fitting sliding steel plug inserted in either end. These tubes are so made that when cold a column of marble carefully turned and polished, and slightly tapering at one end, may be pushed half way in the tube. The latter is then expanded by being heated so that the marble column may be forced right in. Of course, when the tube cools again the marble is not only tightly clenched, but is even being subjected to considerable pressure. The greatest pressure, however, is exerted at either end by means of the plugs referred to, and in these experiments it is said that a pressure of 80,000 lb. to the square inch was obtained, and this could be kept up for some weeks if desired. The pressure causes a molecular re-arrangement of the calcite crystals, whereby these latter are to some extent re-formed, and as during the experiment the tube is bulged out the marble is found to give way also, and to take on the exact shape of the interior of the tube. Thus it may truly be said that the marble is moulded by pressure. Whether the experiments will be found to have much practical value remains to be seen. The marble subjected to such great pressure differs slightly from the original; it is not as hard and is doubtless more brittle. We should have thought that similar results could have been obtained by an adaptation of the experiments made by Sir James Hall a century ago. He placed pounded chalk hermetically enclosed in gun-barrels and exposed them to the temperature of melting silver, when it was found that by retaining its carbonic acid the chalk had actually crystallised and become a white marble. At a later period Gustave Rose repeated these experiments and produced by dry heat, from lithographic limestone and chalk, fine-grained marble without melting. The characteristic crystalline structure of marble has frequently been obtained artificially, superinduced by heat under pressure. As to how far large mouldings of marble could be made by the last-mentioned method we know not, but we can see no inherent difficulty in the matter. It does not seem to be such an intricate way to produce moulded marble as that adopted in the Montreal experiments referred to.

Sanitary State of Aldbrough.

DR. R. J. REECE'S report to the Local Government Board on fever prevalence at Aldbrough, in the Skirlaugh Rural District, gives a fairly favourable account of the buildings, but a very bad one of their surroundings. "In many instances there are merely privies, often close to the dwelling-house; in other instances there are pail closets. Connected with the privies are ashpits: these are never covered over, being in most instances mere holes in the ground; or the refuse is placed on the ground near the privy. Sometimes the site of the refuse tip is marked out with rough brickwork; the floor of this rude ashpit is in most instances below the level of the ground, and no attempt is made to keep it watertight. The scavenging of privies and refuse heaps is left to the inhabitants. The water supply of the village, other than the rainwater used for household purposes, *is derived from shallow wells*." The italics are ours.

Sanitary State of Bettws-y-Coed.

DR. S. W. WHEATON, in his report to the Local Government Board on the sanitary circumstances of the Bettws-y-Coed Rural District and on the prevalence of enteric fever and diphtheria in the district, says that the dwellings are for the most part well built, but old cottages, which each contain two rooms only, are to be found in most of the villages, and such dwelling are without through ventilation. The surroundings of dwellings were, moreover, not satisfactory in the majority of instances. The water supply and the sewage and excrement disposal appear to be very unsatisfactory, and Dr. Wheaton quotes the condition of the village of Cwm Penmachno as an illustration of the results of the complete neglect in the district of all sanitary matters. The roads and paths in this village are unmade and untended. The water supply is very unsatisfactory. There is no system of sewerage. Many dwellings are without house drains for conveying away slop-water, and where such drains are provided they are merely rough rubble channels. Household refuse is allowed to accumulate in the neighbourhood of dwellings, except in the case of houses near the banks of the small stream passing through the village. The refuse from such houses is thrown into the stream or accumulates on its banks until a flood washes it away. Privies are either situated over small watercourses, or discharge directly on the surface of yards; or the excreta are received into receptacles constructed of loose stones or slates, from which the filth soaks away into the ground. The site is naturally a damp one, owing to the situation of the village at the base of a high mountain; and at the time of his visit many of the yards around dwellings were quagmires, composed, in large measure, of organic refuse. The inhabitants of this village are chiefly slate quarrymen and small farmers. As the district is much frequented by visitors during the summer months these unpleasant facts cannot be too widely known.

The Physic Garden, Chelsea.

THE Apothecaries' Company trustees of the garden, lately applied to the Charity Commissioners for relief from their trusteeship, finding themselves no longer equal to the charge upon their resources. The London Parochial Charities' trustees having signified their willingness to take over the trust and to maintain the gardens for purposes of botanical study, the Charity Commissioners will prepare a scheme accordingly. The garden, which is situated between Queen's-road and the riverside embankment at the east end of Cheyne-walk, covers more than three acres, and was originally leased from Lord Cheyne by the Apothecaries' Company, in 1673, for a barge and boat-house. In 1721 Sir Hans Sloane, who had purchased Chelsea manor from the second and last Lord Cheyne, presented it to the Company in trust upon the expressed condition that "it should at all times be continued a physic garden for the manifestation of the power, and wisdom, and goodness of God in creation, and that the apprentices might learn to distinguish good and useful plants from hurtful ones." Sloane also stipulated that fifty specimens of plants reared therein should be sent annually to the Royal Society until 2,000 were delivered. The presentations continued to be made at

intervals until the year 1793; in 1853 the herbarium was given to the British Museum. The "Mr. Watts, keeper of the Apothecaries' garden of simples at Chelsea," whom Evelyn visited, as his diary for August 7, 1685, records, planted the four cedars, whereof one yet survives. The Company set up Rysbrack's marble statue of Sloane in 1733. In the gardens, a favourite haunt of Evelyn, Linnæus (1736-8), Sir Joseph Banks, and of Mrs. Blackwell, who there compiled her "Herbal," Phillip Miller, author of the "Gardener's Dictionary," worked as gardener to the Company nearly fifty years; the Horticultural and Linnæan Societies erected his monument in the (old) parish churchyard.

The Paris 1900 Exhibition.

M. Raulin, the architect, has received instructions from M. Picard, the Commissary-General for the 1900 Exhibition, to construct in the middle of the Galerie des Machines a "Salle des Fêtes" to seat 15,000 persons. This will occupy seven bays of the Galerie, and will be square on plan but with seats arranged on circular lines. Two new façades are to be formed the whole width of the Galerie, one towards Avenue la Bourdonnais and the other towards Avenue Suffren, each with a central flight of steps, or *perron*, leading up to two staircases one at each side, the whole embellished with the usual French decorative features of triumphal arches and pylons, and with a cupola over the centre landing, 90 métres in diameter. The whole interior is to be adorned with sculptures and paintings by the leading artists of the day. The new façades will be a great improvement to the vast building, the two ends of which want something more than the mere engineering lines of structure which now show. But it seems a pity to break up the perspective of that grand roof by inserting an erection in the middle of the building; and the scheme threatens to raise again the difficult question; how to provide for the two annual Salons, which certainly cannot well be housed in the Galerie next season, if all these alterations are going on within it.

THE ARCHITECTURAL ASSOCIATION:

TWENTY-NINTH ANNUAL EXCURSION: LEAMINGTON AND NEIGHBOURHOOD.

Many years having elapsed since the Architectural Association made Warwick their headquarters for an excursion, it was decided this year that Shakespeare's Land should be once again chosen as the venue, and Leamington, by reason of its advantages as a centre and the possession of a suitable hotel, was selected as headquarters. The majority of the excursionists took up their quarters on Saturday, and by Monday morning the party was virtually complete.

Sunday was spent, as usual, quietly, in strolling through the well-laid-out and well-kept streets of Leamington; visiting its churches, especially the fine church by George Gilbert Scott, jun., in the suburb of Milverton, and dedicated to St. Martin, 1879. In the afternoon some of the party drove by the beautiful roads through the remains of the Forest of Arden to Coventry, visiting its churches, its half-timbered almshouses, and its Town Hall.

Monday.

In spite of the fact that the preceding day stands recorded as the coldest in the month of August for fifty years, and was marked also by a heavy rainfall in other parts of England, the excursionists were fortunate enough to find their first day of work fairly pleasant in climatic conditions. The recent innovation of train journeys in A.A. excursions has, in the present programme, been fully employed with the advantage of extending the possible radius of operation. The train therefore was taken to Kingswood, and then carriages for the rest of the day till the return from Berkswell.

The first halt was made at Baddesley Clinton, where the chief attraction was the Hall, an illustration of the entrance to which we gave last week, showing the bridge over the moat which forms the only approach to the house. Reminiscent of Ightham, this moated house is very charming in its colouring of grey stone, lichen, half timber, brick and tile, all set off and enhanced by the water. Baddesley Clinton Hall, from the middle of the thirteenth and fourteenth century, belonged to the Clinton family, of Coleshill. In 1496 it became the property of Nicholas Brome, who erected the tower of the church, and at his death it passed, by the marriage of his daughter Constance, to Sir Edward Ferrers, grandson of William Lord Ferrers, of Groby, and in this family it has since remained.

The house is built around three sides of a quadrangle, and although it has been surmised that like Ightham and other examples, it was formerly continued around the fourth side, there is very little internal evidence to justify the surmise. The tower shown in our sketch last week leads to the quadrangle or courtyard, on the left hand side of which is the entrance to a small ante room leading to the great hall, a highly interesting room with oak panelling, and carved stone chimney-piece of date about 1634, ornamented with shields of family arms and coloured. Fourteen shields with heraldic devices of sixteenth and seventeenth centuries are inserted in the glazing and give the alliances of the Ferrers for several generations. The house is full of the household gods of the Ferrers, collected during their long occupation, and furniture and bric-a-brac from the seventeenth century downwards add much to the charm of the house.

The delights of colour kept many of the party chained to the house, but many went to see the church, of which the best part is shown in our illustration of last week.

The nave of the church appears to have been originally erected in the thirteenth century, and the date of the Perpendicular addition is in this case well authenticated, the walls having been raised 10 ft., and the existing clearstory windows inserted between the years 1496 and 1508 by Nicholas Brome, Lord of the Manor, who also built the tower in expiation of manslaughter—or was it justifiable homicide?—as thus related by "Dugdale:"

"Comming on a time into his parlour here at Baddesley he found the parish priest chocking his wife under the chin whereat he was so enraged that he presently kil'd him; For which offence obtaining the king's pardon and the Pope's he was enjoyn'd to do something towards the expiation thereof; whereupon he new built the towre-steeple here at Baddlesley from the ground and bought three bells for it, and raised the body of the church ten foot higher all which was exprest in his epitaph now torn away."

From our illustration it will be seen that before Nicholas Brome thus expiated his offence the church was of very modest pretensions.

The chancel was rebuilt in 1634 by Edward Ferrers, then Lord of the Manor, as is recorded by a stone over the south door, which states:—

"Edward Ferrers, Esqvire, sonne and heire of Henry Ferrers, Esqvire, and Jane White, his wife, did new builde and reedifie this chauncel at his owne proper costes and charges. Ano. Domi. 1634. This church is dedicated to Sainte James."

In the chancel is a sixteenth century canopied monument, decorated in rather startling primary colours, probably original, and less toned from their bizarre effect than are most examples of mediæval colours as we now see them. On the tomb is the following inscription:—"Here lyeth Sir Edward Ferrers, Knighte, sonne and heire of Sir Henry Ferrers and Margaret Hekstall, his wife, of East Peckham, in the county of Kente, Knighte. He died the xxixth day of August, 1535, leaving issue, Henry, Edward, George, and Nicholas. Here also lyeth Henry Ferrers their eldest sonne and heire, who married Katherine, daughter and one of the co-heires of Sir John Hampden of Hampden, in the countie of Bucks. He died Ano Domi 1548, leaving issue Edward Ferrers, married to Briget, daughter to William, Lord Windsor, of Bradenhà, 1548, and died Ano Domi 1564."

From Baddesley Clinton the members went on to Knowle, where the first visit was paid to the church, built as a chapel of ease to the mother church at Hampton, in consequence of the difficulty which the inhabitants experienced in bad weather of getting to church, by Walter Crook, Canon of Lincoln. The building was consecrated February 24, 1402; a special Bull being granted by Pope Boniface IX., with indulgences for those who attended to the church and contributed towards the repairs. The chief feature of the church is the rood screen, with its exceedingly rich and somewhat curious treatment of traceried fans. It has been moved from its original position, and probably more or less doctored as well as mutilated, but is still a fine example and worthy of study. The church has evidently been lengthened and the clearstory raised in the fifteenth century, and in the lengthening there has been an approach made to the Warwickshire apse. There are some half timber houses and a manor house in the village of Knowle, but the best piece of domestic is about half a mile north, known as Grimshaw Hall, a corner of which is shown in our illustration last week. Although not large, this house is a charmingly composed piece of half timber work of early seventeenth century date. On the customary E plan, but with the side wings projecting behind much more than usual, a quasi-quadrangle effect is obtained at the rear which makes the back of the house almost more picturesque than the front. The front porch is a good piece of design, a piquant effect being obtained by the balustraded sides. Internally several of the old doors and fittings remain with their ironwork.

Very little is known of the family of the Grimshaws, who probably built the house, but, according to Dugdale, Sibill, daughter and co-heiress of Thomas de Maidenbach, and wife of Adam de Grymesarwe, in 1319 inherited the manor of Aston and Dudston, and there was formerly a slab in Solihull Church recording the death of "Richardus Grimshaw, Nuper de Bakers Lane, Gent.," in 1696.

From Knowle the excursionists drove to Temple Balsall, to see the very fine church of late thirteenth-century date, remarkable for its unbroken interior as well as for its exquisite detail. It is, in fact, a single hall of fine size and proportion, suited for use as a chapel rather than for the numerous individual services of a mediæval parish church or abbey.

Temple Balsall indicates by its name that the manor was held by the Knights Templars, who in the reign of Henry III. received it from Roger de Mowbray, "where upon erecting a Church fit for their service of God and a house for habitation, they sent part of their fraternity hither and made it a Preceptorie or cell subordinate to their principall mansion, viz., the Temple, in London. Unto which Preceptorie were also divers lands of good value afterwards given by sundry persons of qualitie."

The Templars being suppressed in 1307, the property was in 1312 transferred by a decree of Pope Clement V., with other possessions of the Order, to the Knights Hospitallers. They do not seem to have resided here as did the Templars, but put in a farmer as tenant. After the dissolution of the monasteries the property formed part of the dower of Queen Katherine Parr; subsequently it came into the possession of Edward Duke of Somerset, and afterwards of John Dudley, Earl of Warwick. In the reign of Elizabeth it was granted by letters patent to Robert Dudley, Earl of Leycester, and descended to his granddaughter, Lady Leveson, at whose death it was bequeathed to trustees for the purpose of founding a hospital or almshouses, "as near the church as conveniently might be, for twenty poor persons, being widows and poor women, not married, of good lives and conversations."

After Temple Balsall the next and last item on the day's programme was Ram Hall, which, as may be seen from our sketch of last week, is a simply treated house of regular outline, principally built of stone but with red brickwork to the gable ends as indicated in the sketch. The most salient feature is the one great red brick chimney stack into which all the flues are gathered. Ram Hall, or as it is locally known, Hill House, from its situation, is but a short distance from Berkswell Station, from which the party returned by rail to Leamington, arriving in a heavy shower, the first rain of the day.

Tuesday.

The second day was devoted to the ancient and historic town of Warwick, of which Leamington may almost be called

a suburb, connected as it is by a continuous succession of houses and a tramway line, of which advantage was taken by the members. Warwick is said by Rous, the historian of the county, to have been a British town of considerable importance prior to the Roman invasion, and this statement is confirmed by Camden, Dugdale, and other writers. The same author relates that, after its devastation by the frequent incursions of the Picts, it was rebuilt by Caractacus, on whose defeat by Claudius, in the year 50, the Romans, in order to secure their conquests in Britain, erected several fortresses on the banks of the Severn and Avon, of which latter Warwick Castle was one; but this is very doubtful, the nearest Roman station having, probably, been that at Chesterton. Upon the establishment of the Saxons in the island, this town, included in the kingdom of Mercia, fell under the dominion of Warremund, who rebuilt it and, after his own name, called it Warre-wyke. It appears, however, from a coin of Hardicanute that its Anglo-Saxon name was Werhica, but from either of these sources its present name may be derived. Warwick was subsequently destroyed by the Danes, and, according to the most authentic records, Ethelfleda, daughter of Alfred and Countess of Mercia, restored it about the year 913 and built a fort, which evidently forms the most ancient part of the present castle, and which is still pointed out to visitors. At the time of the Conquest this fortress was considerably enlarged, and the town was surrounded with walls and a ditch, of which there are still some vestiges, and of which a memorial is preserved in the appellation of a certain part of the town, called "Walldyke." In the reign of Edward I. the fortifications were repaired by Guy, Earl of Warwick, who, in 1312, with the Earl of Lancaster, having taken Piers Gavestone, the favourite of Edward II., brought him from Wallingford Castle, where he was secured for the night under the Baron's guard, to Blacklow Hill, about a mile from the town, where he was tried and beheaded. In 1566, Robert, Earl of Leicester, celebrated in St. Mary's Church the ceremony of the Order of Michael, which, by permission of Elizabeth, had been conferred upon him by Charles XI. of France. William Parr, brother of Catherine, the last consort of Henry VIII., assisted at this ceremony, and, dying soon after, was buried in the chancel of the church. Queen Elizabeth visited Warwick in 1572 on her route to Kenilworth Castle, where she remained for two or three days, and where also, in 1575, she was sumptuously entertained by the Earl of Leicester for seventeen days, and amused with costly pageants and magnificent spectacles, at an expense of not less than 1,000*l.* per day; and in 1617 James I. visited the town, and was splendidly entertained in the great hall of the Earl of Leicester's hospital, in commemoration of which a tablet, with an appropriate inscription, was put up on one of the walls of that building. During the great Civil War in the reign of Charles I., Robert Greville, Lord Brooke, embraced the cause of the Parliament, and defended the castle against the King. Being obliged to repair to London, in order to procure a supply of arms and ammunition, he deputed Sir Edward Peto governor during his absence. The supply being obtained, he was met on his return by the Earl of Northampton with a considerable force near Edge Hill; instead of fighting, terms were mutually arranged, so that Lord Brooke deposited his artillery and ammunition in Banbury Castle and returned to London. After his departure the Earl, having attacked Banbury Castle and taken the military stores, advanced to Warwick and laid siege to the castle, which was defended by the governor for fourteen days, till Lord Brooke, on his return from London after a successful skirmish with the Earl near Southam, came to the assistance of the garrison and compelled the Royalists to abandon the siege. William III., in 1695, visited the town, of which, in the course of the preceding year, more than one-half was destroyed by a great fire, during which the Collegiate Church of St. Mary, with the exception of the chancel, the Beauchamp Chapel, and the chapter-house, was destroyed.

The first visit made by the excusionists in Warwick was to the Leicester Hospital, originally a hall of the united Guilds of St. George and Holy Trinity, which appears to have been erected in the reign of Henry VI. At the time of the Dissolution the hall was given by the master and brethren to the burgesses of Warwick for the Burgess Hall, and the chapel was used as a school. The Earl of Leycester, wishing to found an almshouse or hospital, made an application for the building to be handed over to him for the purpose, and on November 5, 1571, the bailiff and burgesses agreed to his proposition, and on December 26 in the same year the deed of gift was prepared and sent up to the earl as a New Year's present. Dugdale tells us that the inmates of the hospital, who were to be twelve in number besides the master, were to be "impotent persons, not having above five pounds per annum of their own, and such as either had been or should be maimed in the wars in the said Q.'s service, her heirs and successors, especially under the conduct of the said Earl or his heirs, or had been servants and tenants to him and his heirs, and born in the counties of Warwick or Gloucester, or having their dwelling there for five years before; and in case there happen to be none such hurt in the wars, then other poor of Kenilworth, Warwick, Stretford-super-Avon, in this county, or of Wotton-under-Edge, or Erlingham, in Gloucestershire, to be recommended by the Minister and Churchwardens where they last had their aboad; which poor men are to have liveries (viz., gowns of blue cloth, with a ragged staff embroidered on the left sleeve) and not to go into the town without them."

The visitors were conducted over the hospital and received by the Master. The date 1571 appears repeatedly on the building, and most of the building is probably of about that date. It goes without saying, therefore, that its half-timber treatment is especially picturesque, notably in the quadrangular court, around which the dwellings of the Master and Brethren are grouped, and the effect of which, with its gallery and open plan, is particularly piquant. The chapel being built over what was the west gate of the town, and rising from the visible rock foundation, is very striking in its composition, and loses nothing, but rather gains considerably, in effect from the flying buttresses added in 1863, despite the fact that these and the inserted windows are in detail some centuries earlier than the building to which they have been added.

From Leycester's Hospital the members proceeded to the Priory, now the private residence of Mr. Sampson Lloyd, but deriving its name from the fact that here was founded, by Henry de Newburgh, first Earl of Warwick, and his son Roger, a monastic establishment for Canons Regular, and dedicated to St. Sepulchre. At the Dissolution the property was granted to Thomas Hawkins, a retainer of the Duke of Northumberland, John Dudley. Hawkins pulled down most of the monastic buildings, a very few remains of which may still be seen, and built the present house, completing it in 1566. The north front, a portion of which is shown in our sketch last week, is the work of Hawkins, but the south front was rebuilt about 1750. Many successive alterations have been made since that time, so that the house has the charm inseparable from a building that has grown to its present form under the hands of many owners. The members enjoyed to the full the house, the grounds, the hospitality of the owner, and the society of his family.

Leaving the Priory with reluctance, a short visit was paid to the Church of St. Mary—curious in its detail, but scarcely admirable even with our up-to-date penchant for eccentricity. The Beauchamp Chapel received a larger share of attention, not so much for its architectural merit as for the interesting series of tombs it contains.

After the church the members made their way to the castle, well known as one of the finest examples of fourteenth century military architecture to be found in the country. It did not appeal to our excursionists, however, as an example of mediæval fortification so much as, under the influence of a bright and sunny day, the beau ideal in its environment of a nobleman's country residence, and in the interior as a marvellous storehouse of priceless paintings and costly furniture—an example of the museums in which the wealth of England in artistic treasures is stored. The river Avon was crossed to obtain the view of the flank of the castle, the Warwick vase was duly visited, and most of the party climbed laboriously to the top of Guy's Tower for the sake of the beautiful view to be thence obtained.

The last visit of the day was to St. John's House, formerly a hospital "for entertainment and reception of strangers and travailers, as well as those that were poor and infirm," founded by William de Newburgh, Earl of Warwick, in the reign of Henry II.

The present house was built about 1626, by Anthony Stoughton, whose grandfather obtained the property by grant from Queen Elizabeth. The building is a picturesque example of seventeenth century stonework, with transomed bay windows, curved gables, and open parapets. Internally there is a good Jacobean oak staircase, and some oak panelling. This completed the programme of a very full day; so full, indeed, that several of the members were satiated and satisfied to return to Leamington with the last item omitted.

We shall continue our account of the Excursion next week.

ARCHÆOLOGICAL SOCIETIES.

SURREY ARCHÆOLOGICAL SOCIETY.—The annual excursion of this Society took place on the 28th ult. The members and friends assembled at Farnham Railway Station, under the presidency of Viscount Midleton, Lord Lieutenant of Surrey, at 12 o'clock (noon). A drive was made from here to Moor Park, where a paper was read on "Moor Park and its Associations," by the Rev. W. H. F. Edge, M.A., Vicar of Tilford. Mr. Edge said Sir William Temple came here in 1689 and wrote many of his memoirs and essays here; he also laid out the gardens and terraces. With him came Dean Swift, and also Mrs. Johnson and her daughter, Esther, afterwards known as Stella. King William III. also visited Moor Park. Dr. Lane subsequently took the house and formed it into a hydropathic establishment, and amongst those who attended here was Darwin. On the motion of Viscount Midleton, Mr. Edge was thanked for his interesting paper. The party then proceeded by way of "Stella's Cottage" to Mother Ludlam's Cave, the history of which was briefly described by the Rev. Mr. Edge. The next drive was to Whitmead, where a collection of Palæolithic and Neolithic implements, flints, celts, &c., also Roman coins and pottery, found in the neighbourhood by Mr. George Gibbons, was exhibited. After partaking of luncheon, at the invitation of Colonel John Davis, an inspection was made of the remains of ancient entrenchments in the grounds, which were pointed out and described by Mr. Ralph Nevill. The excursionists then drove by way of Crooksbury to Waverley Abbey. Here the ruins and site of the abbey were traced and described by Mr. W. H. St. John Hope, M.A. He said that Waverley Abbey was the first house of the Cistercian order built in England. This order took its name from the Abbey of Citeaux, in the Bishopric of Chalons, in Burgundy, which was begun in 1098. Waverley Abbey was founded in 1128 by William Giffard, second Bishop of Winchester, for the reception of an abbot and twelve monks, whom he brought from Aumône, in Normandy. The Bishop, with the assent of King Henry I., bestowed upon them in perpetuity the land or manor of Waverley, with two acres of meadow at Elstead. William Giffard, the founder of the Abbey, died January 23, 1129, within two months after the date of its foundation (November 24, 1128), and was buried at the east end of the nave of Winchester Cathedral. Waverley Abbey was suppressed in 1536 because it was not of the annual value of 200*l.*, the gross income being returned at 196*l.* On September 21, 1278, the Abbey church, being completed, was dedicated by Bishop Nicholas de Ely, Bishop of Winchester, who died February 12, 1280, and was buried in the Abbey church at Waverley. The party were afterwards taken round the ruins, the foundations of which are being excavated and laid open for inspection, and which were explained by Mr. Hope under great difficulties, as the clouds gathered round and the rain came down in showers. An excellent paper on Waverley Abbey by Mr. F. J. Baigent will be found printed in the eighth volume of the Society's "Transactions." The company then returned to the Bush Hotel at Farnham to a cold collation at 6 p.m., after which the meeting dispersed. A few, however, lingered in the town and inspected the exterior of Farnham Castle, with its tower and kitchen garden on the top of the same, also the quaint old inn near the church, the "Jolly Farmers," the birthplace of Cobbett, and of which there is an illustration in the *Builder*, April 26, 1856.

APPOINTMENT.—The Lords of the Committee of Council on Education have appointed Mr. Walter Crane to the principalship of the Royal College of Art at South Kensington, vacant by the retirement of Mr. Sparkes.

Illustrations.

ILLUSTRATIONS OF DUNDEE ARCHITECTURE.

THE illustrations of Dundee architecture are all referred to in the leading article of this issue.

They comprise a view of The High School, by the late Mr. John Angus, the Custom House, by the late Mr. Taylor, the Royal Infirmary, by Messrs. Coe and Godwin, and the Lochee Free Library and Baths, by Mr. J. Murray Robertson; a Group of Churches—St. Mary the Virgin; St. Patrick's R.C. Church and a Baptist Church, both by Mr. T. Martin Cappon, and St. Enoch's, by Mr. T. S. Robertson; and two examples of street architecture, the Caledonian Insurance Company's offices and Tyffe's buildings, Nethergate, both by Mr. J. Murray Robertson.

THE OAK HOUSE, WEST BROMWICH.

This old house has been extensively restored, and was opened on July 25 as a museum. It has been presented to the town by the munificence of Mr. Alderman Farley, and is one of the most interesting timber-built houses in the country. The original house, built about the middle of the fifteenth century, was what may be described as a yeoman's homestead; later, when its occupants the Turton family became more important, it was considerably enlarged. These additions are shown on the plan; they date early in the seventeenth century, and are conspicuous from being in brick, in many parts built on the face of the old timber walls.

The house has historic as well as architectural interest. It played its part in the troublous times of the Civil War in the seventeenth century; it is even suggested that the unique feature of the lantern was built for military purposes. This is, however, doubtful, the evidence of the enrichments of the timbers point to its being of an earlier date than that at which alterations were made in the house for the accommodation of soldiers. In any case it must have been built to obtain a view of the surrounding country, then thickly overgrown by forest trees. Most of the rooms are panelled in oak and beautifully moulded and carved, all of the seventeenth century, probably at the same time as the extension.

The house for some time has lain in a state of semi decay; the present restoration has been carefully conducted by Messrs. Wood & Kendrick, architects. No contractor was employed, but a staff of men were kept at work under constant supervision. Paint has been carefully removed from the interior oak work, windows long blocked up have been opened out, and in the case of necessary repair the renovation is easily detected. The garden has been laid out to harmonise with the old fashion of the place, and a broad terrace built at the back of the building on the verge of a bowling green.

AN AMERICAN VIEW OF CHURCH ARCHITECTURE.

We mentioned some time ago a paper by Mr. R. Clipston Sturgis, of Boston, on church architecture, included in the report of the last Annual Convention of American Architects. It may be of some interest to English architects to see how the subject is regarded from the American point of view, and we therefore reprint the paper in full, now that the demands upon our space are not so great as at other times of the year:—

"The subject of church architecture is so wide and the circumstances attending its growth in the various Christian countries were so different that it would be impossible, in a short address, to do more than catalogue the subjects and make a barren schedule. Rather than do this I propose, therefore, to pass over without comment those periods and styles which have no vital interest, except for the antiquarian and the student of church history, and no relation to the modern problems with which we are to-day confronted, and confine myself to those times and places which seem most pregnant with suggestion. The early centuries of church building are days of infant growth, as far as architecture is concerned, days when the Church was fully occupied as a missionary body carrying the gospel to all countries. Later, when the Eastern and Western Churches divided, and church architecture as an art was beginning to take form, it was yet among peoples so far removed from us in time and habits of thought, in circumstances and traditions, as to furnish but little suggestion for our modern problems. Early Italian work, whether Roman, Florentine, or Venetian (and the more Eastern work of Constantinople) is but slightly in touch with our Western ideas and civilisation. Neither St. Mark's nor St. Sophia would seem in place in Chicago or Denver.

Notwithstanding the fact that in form and in spirit this work is out of harmony with modern ideas and Western life, it gives us the most splendid example of the use of colour, a standard for all time. Unfortunately we are not, as a people, colourists, and it is only with great care and restraint that we may attempt the use of colour, and in following such splendid examples one is more likely to go astray than to accomplish anything that even faintly reflects their glory.

We are all distinctly a Western and a Northern people, as our fathers were before us, and we have inherited their traditions, their strength, and their weakness; it is to them we must look for our best precedents.

Not until Europe begins to settle down, its roving and marauding population gradually finding permanent centres of life and interest, in the Western Empire, in France and in England, do we find the beginnings of a church architecture which can really be considered as belonging to us. In Southern France a half-forgotten classic, infused with new and vital ideas, was producing the Romanesque, of which one phase was leaving its indelible mark on Normandy, and through the Norman dukes and English kings, on England.

But it was still, ecclesiastically speaking, but a first word, and it is not in the early expression of a yet undivided Catholic Church that we shall find our chief inspiration for modern work. Nor is it on the continent of Europe that we find the people whose lives and habits of thought are most nearly like ours, and whose work is, therefore, most suggestive.

The peoples of Southern Europe, impetuous and emotional, found in the pageantry and power of the Church which Rome and its Pope represented a true expression of their longings and aspirations. Italy, Spain and Austria have found in Roman ecclesiastical authority and in obedience the essence of their spiritual life. The Northern people who were eventually responsible for North Germany, Holland, and England, were less wealthy, less powerful, less able to maintain magnificence, more independent of spirit in matters both civil and ecclesiastical.

From the earliest days which mark the beginning of Papal power we find the English either asserting their previous religious independence or rebelling against the imposition of foreign priestly and episcopal rule.

The traits which marked their character left their impress on the architecture of the time. The Normans, who first built on the lines of anything that could be called a style, departed widely from the current ecclesiastical architecture. Their churches were small, homely, simple, and unpretentious. In Italy the growing magnificence of the Church was gradually replacing the departed glory of Imperial Rome, but Northern Europe and England were but just emerging from barbarism. The seeds of the Christian religion, planted long before in Britain, had produced a very simple type of church buildings, and the simplicity of these early days grew very slowly under the Norman kings to a rude sort of magnificence.

Gradually out of Saxon, Dane, and Norman came the English type—sober, self-reliant, courageous, independent. In that last is their strongest and most precious link with us. It is the barons fighting for Magna Charta or rebelling against Piers Gaveston; it is Chaucer boldly satirising the evils of the day; it is Erasmus and More pleading for intelligence and reform; it is Hampden denouncing injustice and oppression and pleading the cause of the people; it is Pitt working for the good of the many; it is Wilberforce demanding justice toward the enslaved. These are the men and the deeds which link us to England—not ties of blood merely, for with the great mass of us these do not exist, but ties of common thoughts and aspirations and ambitions.

It is of the church architecture of these people that I wish more especially to speak, and of that period of their work which seems to me most nearly in touch with our own life of to-day here in this country. We are past the days of barbarism, and have, perhaps unhappily, outgrown the earlier simplicity and singleness of aim. We are also past the days of intolerance and bigotry, and with, I hope, fairly unprejudiced eyes may look back and try to see what is best in the work of England under Norman bishops, of England independent, of England in Reformation hands, and of England in what I might call restoration days—meaning not a Stuart restoration of misrule, but a Church restoration of that which, in the haste of reform, had been forgotten or left behind. Under all these varying circumstances and conditions English work was always distinctly English. Although their builders or architects were not as a rule imaginative designers, they never adopted a motive or an idea from abroad without putting an English stamp upon it. The earlier Gothic work was as clearly English in its character as was the latest phase of Perpendicular.

Now the simple character and aims of the English lie behind all their work. Even their cathedrals are magnificent more by their magnificent settings than by their architecture which, when all is said and done, is homely—yes, homely and home-like. A directness of purpose and a lack of what one might call either self-confidence or overweening ambition mark all their work.

Of the cathedrals of England much has already been said, and so well said that one naturally passes them by, the more so that we have but few opportunities to build cathedrals. It is the parish churches which may really serve to teach us much and to guide us in similar work here. All classes of Christian people are undoubtedly drawing together in this great and united country. The Roman Catholics seem more free and less trammelled than in the old Catholic countries; the other bodies are no longer narrow and intolerant as they were in days which condemned, as touched with the mark of the beast, anything which was lovely or which added dignity or beauty to the service of God.

The same bodies who 200 years ago would not even name a church, but met together for prayer in unadorned meeting-houses, to-day desire those forms and features which have the holy association of Christian use. It is not, therefore, out of place to look a little closely into those forms as we see them embodied in the parish churches of our Christian forbears. These are scattered all over England, and embrace the period from the twelfth to the sixteenth centuries.

The buildings of this period remaining to us are nearly all country churches, or churches in small towns. All were originally built on lines which pre-supposed light and air, trees and space about them. They are not, therefore, examples for modern city work—of that I will speak later.

For the country, they have proved themselves, through many generations of use, to be suitable; and no one can be familiar with the country churches of England without feeling their perfect charm, their peaceful churchly character, and the spirit of worship which seems to pervade them. The most striking feature of these churches is that they are long, narrow, and low. Among the thousands of churches built during these centuries there is hardly one but has these characteristics. Occasionally generous side aisles may give an appearance of width on the ground plan, but this is not apparent inside, where the lines of nave and clearstory carry the eye down to the distant chancel.

The long and narrow church, undoubtedly, we owe to Norman influence, for in the Norman churches it is invariable, and the later churches of the thirteenth and fourteenth centuries were in many cases built on the lines of an earlier Norman building. One might safely say that the average length of the chancel was double the width, and that of the nave from three to four times its width. It is evident, therefore, that this shape was found satisfactory to these many succeeding generations of people to whom church-going was a most vital part of every-day life.

There are many things to recommend this plan. The narrownsss gives value to the length, which, on a small scale, might otherwise be of no architectural importance, and the length gives dignity to what is the focal point of interest, with all Catholic bodies, the altar, and with others, the preacher's desk and chair. The long narrow nave has proved satisfactory as an auditorium, for it is practically a speaking tube. It is true that rood screens, or intervening arches, often interfered with its acoustic

properties, but in the early days the sermon was the only part of the service which required to be heard, the rest was the repeating of familiar and hallowed words, everywhere alike, and in even the longest churches they would be sufficiently audible to be easily followed, and the sermon was generally delivered from the nave.

For our modern use this plan is suited without change to all bodies which use a ritual, for to them it gives opportunity to emphasise the chancel and altar, to gain the dignity of at least one grand dimension in a small building, and yet, by placing the pulpit at the crossing or in the nave make a perfect auditorium. A building 20 x 80 gives the architect a better chance both inside and outside than a building 40 x 40, and, if true on so small a scale, it is equally so with grander dimensions ; as, however one enlarges, one would naturally leave the absolutely simple lines of the little church, and gain architectural effect in other ways than merely by length. For those who do not use a ritual and to whom the whole service must be distinctly audible, the only modification necessary would be the natural omission of any division between nave and chancel. This is a loss architecturally, but as it has for them no significance ecclesiastically, it would be obviously meaningless and therefore out of place if it were retained. Even with this loss the building would offer much opportunity and the length might be even more clearly accentuated. Constructionally, the simplicity of treating the narrow space is obvious.

To turn from plan to the treatment of exterior and interior : the early work, Romanesque or Norman, is full of suggestion for simple and inexpensive churches—the low walls, the round arch, plain or enriched, the steep pitched roof, open timbered, and the square tower are all forms which are within the abilities of workmen of modest proficiency and on the line of economical work. Even the ornament of this period, while requiring some architectural intelligence and sympathy in the workman, does not call for any great manual dexterity or nicety of execution.

The earliest Gothic was still simple in line, and depended much on clean-cut mouldings, thus requiring better materials and workmanship, and the shafts were often of such dimensions as to require some such material as marble. To many this early Gothic work seems to combine, with the simplicity of aim of the earlier work, a refinement and a directness of constructional effort which the early lacked, and which in the latter was so overlaid with ornament, and carried to such an extreme constructionally, as to be often but a *tour de force*. Still, this latter work was very beautiful, and as it grew more and more elaborate it gave in beautiful tracery of openings, and in carving, still greater opportunity to the artificer and master builder, and there followed the development of tower and spire, porches and other accessories, such as cloisters, chapter houses, side chapel, &c., all of which gave opportunity to the architect.

All of these periods abound in fine open timber roofs ; vaulting, so common in the cathedrals and in small churches abroad, not being common in England. In this, again, England gives us the best examples, as timber roofs, with the proportionally lighter walls which carry them, are more within reach of the means ordinarily at our command.

Such is in brief an outline of the Gothic periods in England. Then came the days of the Italian Renaissance and the revival of the love of the classic, and this—in a thoroughly English way—touched England, too, and promised much for the future ; until the Reformation, shaking the Church to its foundations, and scorning the old things, brought church building to a standstill. When at last it began to move again it was on purely classic lines, and the churches were tinged, if not quite controlled, by the influence of a somewhat narrow Protestantism, and a bigoted dislike for all that was associated with the older forms of worship. It is not until our own generation that anything on the lines of the early work has been done.

While studying and drawing lessons from each period of the gradual advance, it would seem to one most natural and fit, that once one had passed the limit of the mere copyist—a point at which none of us would wish to stay, but through which all pass—one would take up the work where it reached its culmination.

Just here would be a natural and right opportunity for individual judgment, and for the display of that individuality which will mark every true designer. One may feel that the Romanesque, either in its Norman phase, or finding its perfection in the southern country of its birth, is the true expression which may be developed into a perfect and complete style. Another may find his ideal in the severe and simple work of the early thirteenth century ; while yet another may wish to make the sixteenth century his starting point, gathering up the best of the preceding four centuries and adding the enthusiasm of the new learning and the revival of the love for the Classic which touched all the work of that brilliant century with its glory. Each period has its admirers and supporters, and each has unquestionably its special claim to consideration. But the whole period is full of architectural life and vigour, and is one which no one can afford to pass over. We are apt to consider ourselves eclectics in these days, and yet I think the study of the work of the Middle Ages is very generally neglected.

To return again to the plan and its various sub-divisions. The next distinctive feature of the mediæval churches is the division of the building into chancel crossing, transepts, nave, and aisles. Whatever may have been the origin of the cruciform, this one thing is certain, that for all these peoples it signified the Cross which, except in the very earliest days, has always stood the foremost symbol of the Faith. The aisles signified the Trinity. Besides these more obvious symbolisms, the chancel represented the Church triumphant, the nave the Church militant, or the new and the old dispensation. The chancel was further divided into sanctuary and choir, the one for the celebration of the Holy Eucharist, the other for the due rendering of the service. The sanctuary was fitted with altar, credence, piscina, and sedilia, and the choir, besides stalls for clergy and choir, had lectern and pulpit. Side aisles contained side chapels and chantries, for daily or special services, and in these latter and also in the chancel, or chancel aisles, there were tombs, some of which were in themselves objects of veneration as the last resting-places of saints.

All of these things represented some distinct phase of faith—the altar the real presence of the Lord's Body—the choir, the need of orders, and ritual—chantries, prayers for the repose of the souls of those who had died in the faith. In so far as these beliefs are represented by these forms to-day, just so far and no farther are they fit forms for us to use. To all Christian bodies the cross is still the great symbol, and the cruciform is ecclesiastically admissible and architecturally a boon. To the great mass of Christians the Apostles' Creed is the utterance of their faith, and to them an expression of this faith in three-fold nave and aisles is fit and right. The chancel, with all its appurtenances, altar, sanctuary, choir, stalls, desk, &c., unfortunately belongs only to those whose ritual requires these things, but where they are absent there is at least no reason why the minister's platform should be fitted up like an hotel parlour. Such opportunity as there is for dignity and reverential treatment should certainly be seized. Side chapels in a church whose service is said daily to a comparatively small number are in place and a most useful addition. Chantries are practically antiquated, for prayers for the dead, where used, are not said in private by a priest paid for the purpose.

So much for the circumstances under which these forms may be rightly used ; one word about the use of the form where the belief does not justify it. The architect who takes forms which have an ecclesiastical significance and origin, and uses them as artistic accessories where they have no significance and where the faiths they mutely express are not believed in, is acting the part of a charlatan and playing upon the ignorance or carelessness of his clients. Even if his clients are willing to accept these things it is an injustice to those to whom the forms belong in their entirety. Truth is the basis of architectural right and wrong. When mediæval buildings used nave and aisles, chancel, sanctuary, Lady chapels, and chantries, they represented vital forms of faith or served actual uses. Let us be equally true to-day and embody in our churches only what those churches profess ; provide not for mediæval uses, now abandoned, but for modern needs.

Such, in the main, are the chief features of the old churches, which as they answered needs similar to ours, may be fitly followed to-day. There are other needs which are he outcome of growth and the advance of civilisation, with which they were not called upon to grapple and which we must solve for ourselves.

First, to finish with isolated or country churches, before touching on the city problem, we need more or less ample accommodation for the clergy, for the choir, for the children's school, for the gathering of the various lay bodies who help in the great church work. For all these the old buildings give practically no precedent. Occasionally a vestry, a sacristy, or an aumbrie was attached to the chancel. Even these were largely removed in Reformation days. There is, however, one rather apt lesson which the English ecclesiastical architects did most clearly teach, and that is, that if a need exists, the simplest and most direct solution is generally best, and if a place for a priest to vest was needed they put a room of the necessary size where it was most conveniently placed for use, and this done, they found its architectural treatment practically settled.

The modern plan which one sees so often followed is to take some hard-and-fast, well-balanced scheme, and let the morning chapel balance the vestry, the porch balance a lavatory, and a baptistry balance a room for mothers' meetings. This sort of thing may work well for large classic buildings and sometimes seems the essential note in such plans, where the regular balance of parts, and the relation of parts to the whole, are necessary to the design ; but with churches it is somewhat different, the width and length of chancel have never had any fixed relation, nor has any such existed between nave and aisles, and the meaning and use of the various parts of the building have been a gradual natural growth, responding to need, and fulfilled by a skill which was steadily improving. Such a growth cannot be reduced to a system—such symmetry as exists is occult rather than obvious.

It may seem begging the question to thus pass over without comment churches built on classic lines, but I have for lack of time been obliged to confine myself to one country—the one from which I believe we can learn most—and notwithstanding Wren's prolific production of semi-classic work, I do not think that either Wren or his followers have left a lasting mark on ecclesiastical architecture. Not a church rises in England to-day on the line of his work, while hundreds are following the lines of thought so rudely interrupted by the troubles of the Reformation. Nor does it in any way follow that the bodies who date only from the Reformation should hold to the models of chapel and meeting houses which were erected by their ecclesiastical forefathers, for we see clearly enough now that these men in the over-zeal of reformers, a zeal which we cannot but admire, overthrew much that was beautiful and lovely and of good repute, and which was fit to make the service of God more reverent, and more worthy. The barren meeting houses, and despoiled and white-washed churches are a warning, not a precedent.

When we turn from country to city churches we find ourselves confronted by wholly different problems. We have seen churches, built on the old plans, gradually surrounded by buildings which press in around them, crowd and overshadow them, until one must feel convinced that the solution has not been reached. In the country one can build low nave and aisles and thus emphasise the height of spire and tower, but of what use is this in a city where an office building, or even a ten-story apartment will throw the spire into the shade and make the nave seem but a hovel? Even where the church, long established, has grounds about it and is thus saved from absolute encroachment, it is fairly evident that the building is an anomaly or an anachronism.

The natural way in which the city church presents itself to my mind is that it must conform to a city lot, generally narrow and deep, and lighted on two ends only. With low naves and high towers and spires ruled out as already noted, we have still left our early distinguishing feature of length, and the question of lighting length with outside light is at once answered by adding aisles to nave and depending on a lofty clearstory. The necessity for the important clearstory naturally suggests that in length and height of nave we shall find the best solution of the city church. We have given up nothing of essential ecclesiastical precedent or character in the interior, and in the exterior we confine ourselves to a single fine façade (or

perhaps two if the building runs from street to street).

This seems to me the most obvious way of meeting the requirements of a city building, and gives ample opportunity for beauty; a great west window with lofty rising lines may well seem to have the dignity and beauty of aspiring height, and yet not challenge comparison with even a twenty-story building.

For such buildings the continent, especially France and Belgium, furnish us the best precedents. French cathedrals and churches seem to one fresh from England immeasurably lofty and sublime; and the people of the Netherlands were fully alive to the value of narrow and lofty fenestration—often further emphasised by mullions so light as to seem scarce capable of sustaining their height.

A noted English architect once said to me, 'If you have height, do all you can to emphasise it and make it tell, and if you have length let every line tell of length.' This, to my mind, is the keynote in church building. If you can have all the dimensions heroic like Amien, well and good; but if you have opportunity for but one, make the most of that.

Finally, no notice of ecclesiastical architecture, however brief, would be justified in passing over without comment the work which has been done in the present century. In the early part of the century, church building was at its lowest ebb—hardly a building of any importance or merit was erected; but with the forties and fifties men began to inquire as to the wisdom of our forefathers in ruthlessly destroying or casting out what was beautiful. The church alone seemed to be separated from what was lovely. With the revival in England of the study of church doctrine came the revival of the study of church architecture. Cathedrals and parish churches were repaired and restored (sometimes we could almost wish these early enthusiasts had not done this); engravings and measured drawings were published, a general interest awakened in the many arts which were crushed by the zealous reformers.

Out of these studies and inquiries came, in England and here, men who understood the old work and loved it—who loved what it meant, and who thus loving could put new life into it. Previous so-called Gothic revivals had been attempted with ghastly results, but with Pugin and Sedding the lost arts of the sixteenth century received new life, and now there are a number of vital designers in England, and not a few here, who have studied the old work with reverence, and who can design and build in the spirit of the earlier days.

Do not run away with the idea that I am a mediævalist. I have no wish to return, even in thought, to days which were so far less full of opportunity than these, but I am fully persuaded that we in this country are so much accustomed to looking, to straining forward, that we do not study sufficiently and try to learn from what lies behind or even about us.

It is good sometimes to drop the rush and the bustle of our hurrying life and just take at least a glance behind to assure ourselves that our progress is really forward, and that in our eagerness for novelty we are not wasting time in studying problems which have been solved and settled long ago."

COMPETITIONS.

Well's Blue Schools, Somerset.—Designs for a new girls' school by Mr. H. Dare-Bryan, of Bristol, have been selected in a limited competition by the Governors of this foundation and approved by the County Council Education Committee. A cookery room is included in the scheme, and the schools will be erected in Portway, close to the famous tower of St. Cuthbert.

BOOKS RECEIVED.

Lessons from Fire and Panic.—By Thomas Blashill (The British Fire-Prevention Committee).

Devon and Exeter Architectural Society. Mr. Harbottle Reed, Hon. Secretary of this Society, has sent us the following communication:—"*Re* the Tavistock-road Competition: 'The attention of the Council of the Devon and Exeter Architectural Society having been called to the published correspondence between the architects of Plymouth and the Corporation, upon the above, a resolution was passed approving of the action of the local architects, and expressing regret that the Corporation were unable to accede to their suggestions.'"

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

An Irish district meeting in connexion with the Association of Municipal and County Engineers was opened in the Municipal Offices at Cork on Friday, August 5. Mr. O. Claude Robson, Willesden (President), occupied the chair, and amongst those present were Messrs. T. Cole (Secretary), Westminster; R. H. Dorman, Armagh (Irish District Secretary); J. W. Wardle, Longley; H. W. Cook, Lancaster; A. E. M. Beath, Sale; C. Botterill, Fulham; R. W. Longfield, Donegal; C. O. Lyons, Cork; M. J. Buckley, Drumcondra; J. Smith, Ballinasloe; J. Horan, Limerick; H. A. Cutler, Cork; M. J. Fleming, Waterford; and others.

The Mayor of Cork (Mr. P. H. Meade), in welcoming the Association to Cork, said that the members as a body represented a class of professional gentlemen the importance of whose work it would not be easy to overestimate. In their hands the health and happiness of the citizens of the various districts of the country largely rested.

The President, in acknowledgment, thanked the Mayor for his kind reception.

Mr. R. H. Dorman, Armagh, was unanimously re-elected honorary secretary for Ireland.

Mr. H. A. Cutler, Assoc.M.Inst.C.E., City Surveyor of Cork, then read a paper on "Restoration of Municipal Buildings, and Description of Cork Waterworks." He said that in 1889 the Corporation purchased the Corn Exchange, which, by alterations and additions, was made suitable for the requirements of the city. The roof of the old building was removed and an upper floor, carrying the council chamber and other offices, constructed on girders and columns over the ground floor, which was used as a vestibule. Before the work was completed serious settlements occurred in both wings, and within a very short time after completion the openings had to be braced and various temporary measures adopted to prevent accidents occurring. In 1896 he was instructed to report to the Town Council on the state of the buildings, and the work necessary for restoration. On surveying the buildings the concrete foundations of the wings were found to have insufficient spread and to be too thin for the weight they carried, as evidenced by the longitudinal cracks in the concrete under the walls; they were also laid practically flat on the surface of the ground, without more than about 6 in. of excavation. The foundations of the old walls, to which the new work was bonded, were on a bed of gravel 17 ft. below the floor line, and the ground above the gravel consisted of about 10 ft. of blue mud, surmounted by about 6 in. of filling. The walls of the new wings, which were rough rubble plastered externally with cement, were found to have sunk 6 in. in the middle of their length, the ends being suspended from the old walls, in which they were bonded. Large and dangerous cracks were found in all the new work, some of the relieving arches had dropped out of the floors, and roofs had followed the sinking of the walls; some of the old walls were cracked with the extra weight caused by the new walls being bonded into them. The two central columns in the vestibule supporting the girders under the Council Chamber, had sunk about 1 in., and were considerably overloaded, while the girders which they were supporting were strained to their elastic limit, and the joists of the Council Chamber floor were only about half the necessary strength. After considering the cost he reported to the Council that it would not only be considerably cheaper to underpin the walls and raise the floors and roof than to pull down and rebuild, but that the work could be done without turning the officers out of the building. The estimated cost of underpinning and restoring the building to its original condition was 2,000*l*., and the cost of the work had been little, if anything, over the estimate. In deciding to underpin, the only doubt in his mind was whether the pumping of the water with which the ground was charged would cause further settlements before the foundations could be put in, and it was only by the exercise of the greatest care that failure was avoided. The underpinning was done in lengths of about 9 ft. with cement concrete, one 9 ft. pier being built under the centre of the length of each wall before any other holes were sunk. When a central pier was completed holes, were sunk for piers on each side simultaneously, thus leaving alternate bays standing on the original foundation. In making the excavations the ground was first cleared to the under-side of the original foundations, and two trenches cut at right angles to the wall about 6 ft. apart, deep enough to get steel needles under the concrete. The needles were 12 by 6 rolled joists, 12 ft. long, supported at their ends by half timbers about 10 ft. long, laid in trenches cut parallel to the walls. When the half-timber sleepers and needles had been placed in position and wedged up, the ground was excavated on one side of the wall only for the length of the intended pier, about 3 ft. 6 in. wide, and 5 ft. below the under-side of the old concrete. The ground under the walls was then excavated. The height from the finished concrete foundations to the under-side of the girders was 1½ in. greater than the length of the stanchions, and when the stanchions were put in position they were wedged up tight to the under-side of the girders by driving iron wedges between the concrete and the base plates; a bank of clay was then formed all round, about 3 in. from the wedge of the bare stanchion, and the space grouted with neat cement. When the grout had set, the iron wedges were drawn, and the holes filled up with cement. When the foundations were completed and the building was considered secure the floors and roofs were jacked up to their original position. Mr. Cutler then proceeded to describe the water supply of the city. The water is pumped from the river Lee into two reservoirs. The high-level reservoir had a capacity of 721,500 gallons, and supplied water to 17,760 persons, while the low-level reservoir had a capacity of 3,404,000 gallons, and supplied water to 68,529 persons. The total pumping capacity was 403,767 gallons per hour, but with the exception of the two new American turbines, the whole of the pumping plant was wasteful and obsolete. The water at the intake was a good potable water, containing only 4·5 degrees of hardness, and was an excellent water for domestic purposes; but in times of heavy rainfall large quantities of peat and decayed vegetable matter were brought down the river, causing great discoloration and deposits in the reservoirs, mains, and services; at the present time plans were being prepared for the erection of filters, which when completed, would no doubt relieve the minds of the consumers from the uneasiness always felt when drinking water was discoloured. The daily quantity of water supplied for all purposes in 1896 reached the enormous quantity of 71 gallons per head, with the result that the higher portions of the city were entirely without water except during the night and early morning. Early in 1897 the most strenuous exertions were made to prevent the waste of water, with the result that at the end of the year the water supplied to the city for all purposes had been reduced to 48 gallons per head. The Deacon meter system was introduced with satisfactory results; and an adequate staff of inspectors was engaged in inspecting house services and serving notices. The valves were tested with the stethoscope, and noisy valves located. The principal difficulties now encountered in further reducing the waste was the inadequacy of the service pipes and house fittings to withstand the increased pressure in the mains.

Mr. W. H. Hill, Cork, said that before Mr. Cutler undertook the restoration of the Municipal Buildings, the walls were in such a damaged condition that he almost thought any restoration hopeless, but by patient work Mr. Cutler had succeeded in carrying out the work efficiently and well.

Mr. Cooke, Lancaster, said he had used the Deacon meter at Lancaster with equally satisfactory results in preventing the waste of water.

Mr. Kirkby, Cork, said that the whole of the city was built on more or less treacherous ground, and with large buildings much care had to be exercised in securing proper foundations.

Mr. Fleming, Waterford, said he considered the present consumption of 48 gallons of water per head was most excessive, for in Waterford the consumption did not exceed 27 gallons. He approved of the Deacon meters, which he had in use in Waterford.

On the proposition of the President, a vote of thanks was accorded to Mr. Cutler for his paper.

Mr. B. Griffin, A.M.Inst.C.E., Cork, then read a paper on the "Cork Electric Tramways." He

said it was worthy of note that the Cork Company was the first in the British Isles supplying electricity for traction and lighting from one central station. The tramways were for the most part single lines with passing places, and the length of track was eleven miles. The gauge was 2 ft. 11½ in., and was determined with a view to the probable use of the tramway for conveying the trucks of the Muskerry Light Railway Company to and from the quays, and for interchange of traffic with the Cork and Passage Company. The rails were of the girder type, weighing 83 lbs. per yard, and were of American manufacture. The steepest grade was one in 14, and the sharpest curve was 27 ft. radius. The rails were laid upon a continuous bed of Portland cement concrete, 6 in. deep and 7 ft. wide. The roadway was paved with Welsh granite setts, 6 in. deep and 3½ in. wide, laid on a ½-in. bed of sand and grouted with Portland cement mortar well swept into the joints. The power station was fitted with three tandem horizontal condensing McIntosh & Seymour engines directly coupled to 220 kilowatt generators, running 150 revolutions per minute. The three boilers by Babcock & Wilcox had each 2,531 square feet of heating surface, and are capable of evaporating 8,000 lbs. of water per hour. The battery room contained 256 Tudor cells, capable of discharging 110 amperes for seven hours. The chimney was of steel, 130 ft. in height, and the advantages claimed were saving of time in erection and cost in the structure. The saving in cost over a brick stack was about 25 per cent. The cars were built to carry forty-four passengers. Span wires would only be used in one or two instances where there were double curves in the street.

Mr. Cutler expressed the opinion that it was preferable to grout the setts for tramway paving with pitch rather than with cement and sand.

After further discussion, a vote of thanks was accorded to Mr. Griffin for his paper.

Mr. R. H. Dorman, M.Inst.C.E., County Surveyor of Armagh, then read a paper on "Main Roads under County Councils in Ireland." He said the meeting afforded a fitting opportunity for referring to the future management of county works in Ireland. The network of roads, maintained with efficiency and economy, which covered the face of Ireland was a record of the signal success attained by the Grand Jury system. So many circumstances and conditions would have to be considered in different cases, that it would probably be impossible for any County Council or Surveyor to lay down any hard and fast rule. He would, however, consider the case of County Armagh. In that county the roads were classed as first, second, third, and fourth class. The cost of the first class averaged 41*l.* 15s. per mile annually, the second class 15*l.* 5s. per mile, the third class 9*l.* 5s. per mile, and the fourth class 8*l.* 6s. per mile. Now for that county he suggested that a road which was a main artery of the county, over which the public travel for divers purposes, and which had for the previous three years cost on the average 24*l.* per mile per annum to repair, should be termed a main road, and the expense of maintaining it should be levied half off the county at large. It was quite possible that some County Councils might decide to declare all county roads main roads, and other counties might refuse to declare any roads main roads, but he considered that either of these views would be unreasonable. As regarded the future maintenance of roads in that country, he thought the general opinion among County Surveyors was that the most economical method of maintaining the by-roads was under the contract system, but that for the main roads contracts should only be entered into for the supplying of material, and that the rest of the work should be carried out by the Surveyor's own staff. He was for a long time in favour of the contract system, but he had in recent years completely changed his opinion. He would leave it an open question whether the County Surveyor should raise his own material or whether a contract should be entered into for the purpose. In conclusion he pointed out that the conditions under which traffic was being conducted in Ireland had to some extent changed during recent years, and further changes in this respect were imminent. Tourist traffic was being largely developed, and myriads of cyclists were inundating the country; the traction engine was making its appearance, and they might look forward to see light carts superseded perhaps by motor cars.

Mr. J. Horan, Limerick, said he would put the whole cost of the maintenance of main roads on the county at large, instead of one-half of the cost as suggested by the author of the paper.

Mr. Longfield, Donegal, said they looked forward with some apprehension to the action of the new authorities, and the probable attitude of the District and County Councils towards each other.

Mr. Kirkby, Cork; Mr. Lyons, Cork, and other County Surveyors, took a brief part in the discussion, at the close of which a vote of thanks was accorded to Mr. Dorman for his paper.

At the conclusion of the business proceedings the members of the Association were entertained at luncheon by the Mayor (Mr. Meade) at the Victoria and Great Central Hotel.

The Mayor, in proposing the toast of "The Association of Municipal and County Engineers," coupled with the name of the President, Mr. Robson, said the aim of the Association was to raise the tone of the great profession to which the members were connected, and at the present time, when they saw such progress and improvement in sanitary science and engineering, it was peculiarly gratifying to welcome the members to Cork.

Mr. Robson, in responding, said the primary reason for the holding of these meetings was the diffusion of professional knowledge, the gaining of additional experience by intercommunication of ideas, and the reading of papers. During the past thirty years the duties of municipal engineers had enormously increased, and not only the health of the community, but the judicious expenditure of much public money, depended upon municipal engineers. In conclusion, he proposed the health of the Mayor and Municipality of Cork.

The Mayor responded, paying a high tribute to Mr. Cutler, the present City Engineer.

The members then visited the Electric Light Company's central station in Albert-street, and other works in course of construction, and afterwards proceeded to Blarney and St. Anne's, where they were entertained to tea by Mr. R. Barter, J.P.

On Saturday morning the members assembled at the Municipal Offices and drove to Tippotstown, the site of the Queenstown Waterworks. On arrival at Queenstown, the local members of the Association entertained their colleagues to luncheon in the Queen's Hotel. Mr. Kirkby presided, and was supported by Mr. Robson and the other members of the Association. In the afternoon a cruise was made round Cork Harbour, with visits to the harbour works and the Cork, Blackrock, and Passage Railway extension to Crosshaven.

THE NEW LUNATIC ASYLUM AT BANGOUR.

THE Edinburgh and District Lunacy Board met on the 28th ult., and after considering the reports by Mr. W. H. Robertson, of H.M. Board of Works, assessor in the competition, and Dr. Robertson, of Murthly, of Perth District Asylum, and Messrs. P. Lawrence & Co., surveyors, appointed Mr. Hippolyte J. Blanc, R.S.A., to be architect for the new asylum, and awarded the following premiums:—First premium (250*l.*) to Messrs. M'Arthy & Watson, Edinburgh; second premium (200*l.*), Mr. William Eglesham, Ayr; third premium (150*l.*), Messrs. Thomson & Sandilands, Glasgow; fourth premium (100*l.*), Messrs. M'Gibbon & Ross, Edinburgh. Under the conditions and instructions to architects it was provided that whatever architect was placed first by the assessor should receive the appointment, and that among the other competitors there should be distributed in addition four money awards in the order of merit.

The characteristic aimed at by the successful architect in the outward treatment of the designs is variety of expression, consistent with the internal requirements. The administrative block is placed in the middle of the medical and hospital blocks, near the localities to be served. The porter's house is placed at the back, with separate access and staircase, but with through communication to the main building. The plans of the kitchen block provide for the requirements, and show all the fittings and apparatus requisite for cooking for 1,000 patients and 200 officials. Bedroom accommodation for cook and assistants is also provided within the block. The stores block and the kitchen block are attached, and have through private communication. An abundance of lighting is afforded by means of continuous cupolas of clearstory sidesashes, with opening frames for ventilation, under simple and easy control. The church is designed to meet the requirements of Presbyterian or Ritual service as may be desired.

The recreation hall is placed almost in the centre of the whole site. The floor area is unobstructed by pillars, and provision is made for stage and dressing-room requirements. At the main entrance are two cloak-rooms, and for an increase of accommodation a gallery can readily be constructed over the recess between the two vestibules to hold 130 persons. There are four doors of access, any two of which can be for males, and two for females, if desired. In treating the exterior of the hall one of the vestibules has been designed to carry a lofty tower. In that tower it is proposed to place tanks of 30,000 gallon capacity, wherein water may be stored for the general service of the several blocks or for the washhouse, and also as a supply for fire hydrants. Above these is a clock chamber. The bath-house is lighted from clearstory windows. The mortuary block is planned upon the lines of the best-equipped mortuary in this country. A special addition shown upon the plans is a duplicate mortuary for the sexes, a dissecting-room, and a refrigerator. The situation of the mortuary has been specially considered. It is comparatively near the hospital, and from it bodies may be removed outside the precincts of the colony without observation by any inmates. The laundry block is quite close to the kitchen and store block. As in other blocks named, the natural lighting here is by continuous upright glazed cupolas. The boiler and engine-house block immediately adjoins the store block. The dynamo-room is of ample space to admit of an increase in the number of dynamos, and also to afford space for storage batteries. The bakery is designed to meet the requirements of 1,200 people. The workshop block is attached to the engine-room block. It forms in its complete condition three sides of a courtyard. The nurse's house is placed at the extreme west end of the site. Special accommodation for a matron is also provided. The medical superintendent's house is placed within easy reach of the main entrance. The attendants' cottages are planned for varying accommodation of three and four apartments. Those of three apartments have no separate bath-room, while those of four apartments have. The series is designed with a view to picturesqueness, without unnecessary ornamentation, but with sufficient form to give them architectural interest. The infirmary and sick-room blocks complete the group fronting the high land on which the medical section is placed. The hospital block is so arranged that one side or half is a counterpart of the other. The kitchen is arranged in the middle. A doctor's room is also provided. A feature of the plan is that at the ends of the wards are two single rooms, one of which is for a moribund patient, who, after death, can be removed by the outside door of the room without having to be conveyed through the ward. The arrangement has received careful consideration to secure separation of sexes, and easy communication throughout upon an economical form of construction.

The asylum houses are arranged to supply the accommodation required, and variety is sought to be gained by varying the areas and consequent accommodation of dormitories in the several blocks. For the industrial or non-medical section ten separate schemes for villas are submitted—five for men and five for women. The aggregate number of 150 of each sex has been divided as follows:—One villa of 25, one of 26, one of 28, one of 32, and one of 40 patients.

Fire hydrants and hose chambers are provided for in every block at convenient places in the corridors or in staircases. No special fireproof construction is contemplated. There is comparative immunity from fire risks by the isolation of the different blocks. The lighting is proposed to be by electricity. The ventilation of the various dormitories and day-rooms is provided for by means of fresh-air inlets in the window recesses at the floor levels, under key control of the attendants. Radiators are proposed to be placed in the window recesses, so that in winter the incoming air would be warmed, while in summer the air would be admitted by the same openings in a natural state. For the release of vitiated air grated openings are proposed to be placed in the walls near the ceilings, and led in specially-constructed glazed brick flues into an outlet shaft and ventilator in the roof. All windows are intended to open, but by means of a small brass bracket permanently screwed to the case the extent of the opening is limited to about 7 in. The cost of the building, to accommodate 1,000 patients, is set down at 235,000*l.*

GLASGOW ARCHITECTURE.—In reference to our recent article on Glasgow architecture, Mr. Burnet asks us to state that the work imputed to him was done by the late firm of Messrs. John Burnet, Son & Campbell. The mistake was due to the title on the drawings sent in by Mr. Burnet.

QUEEN'S CLUB GARDENS ESTATES.—A company is about to be formed to acquire and develop for residential purposes the freehold of Stanwick-mansions (comprising three blocks of ten flats each) in Stanwick-road, West Kensington; the St. John's Lodge Estate, North End-road, Fulham; Queen's Club-gardens (thirty-four blocks of flats), and some adjacent property in Normand and Musard-roads. The various properties were built by the vendor, Mr. W. H. Gibbs, who fixes the purchase-money at 485,000*l.*; the present gross rentals amount to 30,819*l.*

Correspondence.

To the Editor of THE BUILDER.

APPOINTMENT OF ARCHITECT, UNION WORKHOUSE, SALFORD.

SIR,—We have had our attention drawn to a paragraph in your issue of the 30th ult., referring to the appointment of architect recently made by the Salford Board of Guardians.

A few weeks ago we received a communication from the Board, intimating that we had been nominated as architects experienced in work of this class, and inviting us to an interview as candidates for the appointment. A circular note was sent to us stating that the Guardians were prepared to pay the architect selected 5 per cent., but that he would be required for that payment to provide the quantities, and give all necessary superintendence, and to perform all the duties of surveyor as well as architect. The Guardians, as you state, met on the 22nd ult., and we decided to attend for the purpose of entering our strong protest against the proposed terms, pointing out that it was neither in accordance with usual custom, nor with the schedule of charges recognised by the Royal Institute of British Architects. We definitely refused to accept their terms, as did several other of the seven architects whose names had been selected, pointing out that no architect should be invited to undertake a large work of this kind on insufficient remuneration; but our protest was of no avail, as three of the architects gave way on the point.

Such conditions of payment are not in accordance with the schedule of the Royal Institute of British Architects, nor such that any responsible architect should have placed before him to take or leave, especially in the manner in which it was done by the Salford Board of Guardians.

A precedent of this kind will, no doubt, be eagerly seized upon by public bodies, but if a stand were made by representative societies and the position fairly stated, it would be understood that architects of good standing will not undertake to combine architects' and surveyors' work at 5 per cent. or any other insufficient remuneration.

The architect does not only stand as an employee, but quite as much as an independent adviser and arbitrator. To assume this position he must be properly paid, and his standing must be a professional one and not only that of a man of business.

THOS. WORTHINGTON.
PERCY S. WORTHINGTON.

HYDRAULIC RAM PROBLEM.

SIR,—Will any reader who understands water supply by means of hydraulic rams kindly assist me with the following problem?

I have a spring, situated at the side of a burn, and about 3 ft. above bed of burn, yielding 2½ gallons per minute.

The spring is not on my own property, but I can get way-leave for a pipe. The ram is to be put at the side of the burn on my own ground, and about 225 yards from the spring. As the burn sometimes comes down in heavy spates, the ram will be kept 3 ft. above the bed of the burn.

I purpose using a 2-in. cast-iron pipe. This size will allow for any furring-up which may take place.

The fall on the distance from spring to ram is equivalent to fall of burn, viz., 20 ft., measured vertically.

The height to which the water is to be raised is 55 ft. vertical, and the length of delivery-pipe, which can be made any size, is 60 yards.

The question is, Can so long a drive-pipe (225 yards) be employed to drive a ram direct, or must I construct a tank to deliver the water into, and use a shorter drive-pipe from tank? What type of ram should be used, and its dimensions? W. T.

THE NORWICH FIRE.—The Edinburgh public-house, Norwich, situate at the corner of the block where the recent fire raged, had withstood the devastation on either side, and had been temporarily shored up. The adjoining buildings were destroyed, but the public-house was not considered unsafe, and business was conducted as usual. A few minutes before six o'clock on the 3rd inst. the house suddenly collapsed. Only two persons were inside at the time—the woman in charge and a little girl. The latter escaped, but the woman was struck by the *débris* and hurled into the cellar, sustaining a compound fracture of the leg. Two men working in the adjoining ruins were buried, but were extricated by the police.

The Student's Column.

SOUND, LIGHT, AND HEAT.—VII.

THE VELOCITY OF SOUND (*continued*).

WE have already alluded to the velocity of earth-waves in solid substances, such as granite and sand; and it may be taken as granted that, as a general rule, the elasticity of solids as compared with the density is greater than that of liquids, and, consequently, that the propagation of sound in the solids is more rapid.

Turning to the velocity of sound in woods of different kinds—an important phase of our subject—it is found that pine does not permit such high velocity as oak, the former yielding an average result of 10,900 ft. per second and the latter 12,620. On the other hand, even oak does not give such a high velocity as cedar, elm, ash, fir, or walnut, the figures for the last mentioned, which yields the highest results, being 15,740 ft. per second. The structure of the wood—the disposition of the cells, aggregate cells, and cell fibres—is, no doubt, mainly responsible for this. If the sound in the interior of a building were purposely propogated through wood, the figures quoted would have more real force for us; but, seeing that sound is generally directed against the wood, as when this latter substance forms the linings of walls, the floor, ceiling, &c., problems connected with reflection and absorption to a large extent usurp those more directly related to velocity.

The velocity of sound is slowest in such substances as caoutchouc, 150 ft. to 200 ft. per second, and rises highest in such as wrought iron and cast steel, 16,500 ft. per second. The velocity is not so high in lead, gold or silver as in the woods mentioned, but these latter yield lower results than glass or steel wire. In the case of wood the velocities are greater along the directions of the fibres than across or along the rings.

The velocity of sound in solids and gases can be readily determined by a very simple apparatus invented by Kundt. Atkinson describes it as a glass tube about 2 yds. in length and 2 in. in internal diameter, closed at one end by a moveable stopper; the other end is fitted with a cork, which tightly grasps a glass tube of the same length, but of smaller diameter. This is closed at one end by a piston, which moves with gentle friction in the outer tube. Then, by rubbing the free end of the smaller tube (that portion of the piston rod outside what may be called the cylinder) with a wet cloth the tube produces longitudinal vibrations, and these transmit their motion to the air in the larger tube. If this latter contains some powdered cork this is set in active vibration by the longitudinal vibrations alluded to, and the powder arranges itself in small patches some distance from each other, and in a definite order, the nature and arrangement of which depend on the vibrating part of the rod and the tube.

Now, as the velocity of sound in any body is equal to the wave-length in that body multiplied by the number of vibrations per second, it is not difficult by the apparatus described to ascertain the velocity. For the little patches of powdered cork referred to represent nodes, and the mean distance between them can be measured with great accuracy; it represents the distance between two nodes or half a wave-length—the wave-length of the sound in air. In regard to the method of determining the number of vibrations per second, we must give particulars as to that in another connexion later on, but the student will see that by determining that, and with the factors already ascertained, the velocity of sound in air may be readily arrived at. By a simple stopcock arrangement different gases may be introduced instead of air, and it will then be found that the powdered cork on being vibrated as before will arrange itself in different lengths or distances apart from those which were ascertained in air, and these lengths will differ with each gas.

The student will have noticed that the small tube (the piston-rod, so to speak) in the above instrument is made of glass, and that it was this which, on being rubbed, produced the longitudinal vibrations. It will be evident, therefore, that if we vary the substance of this rod we shall get corresponding differences in the longitudinal vibrations, and correspondingly different results in the lengths of the segments made by the powdered cork. In this way the velocity of sound in various solids can be determined by the same apparatus. Atkinson records the velocity in steel as 15·24, and in brass as 10·87 that of air. Of course, the velocity in air is taken as the standard. This may be described as a graphic method of ascertaining velocity of sound, and it is capable of yielding extremely accurate results when the apparatus is properly adjusted. By modifications of the same instrument the velocity of sound in water contained in glass tubes may be ascertained; and by surrounding the tube with a jacket which can be raised to various constant temperatures by the vapours of different liquids, the velocity of sound in such vapours may be determined. In the case of metals tested it is highly desirable that the fibre should be ascertained and recorded, for, as will be readily understood from what has previously been said, the direction of the fibre is an important factor in transmitting velocity.

SOUND-PROOF PARTITIONS.

To obtain a sound-proof partition in a building it is necessary to construct the bulk of the partition of a substance which offers the greatest resistance to the velocity of the sound. This is best effected by employing substances which conduct sound badly. The figures quoted in reference to caoutchouc will occur to the student in this connexion. We would refer to the last article where, if the respective figures be compared, it will be seen that the velocity is much less in certain common substances than in those ordinarily employed in building. At the same time, nothing of an ordinary nature beats caoutchouc for stopping sound. The earth-waves in wet sand, good material as that is, proceed at a velocity of 951 ft. per second, and Mallet shows that the velocity of the transmission of sound in wet sand is only 825 ft. per second. But even that cannot compete with the caoutchouc, which stands at 150 ft. to 200 ft. per second for velocity, and some experiments on old caoutchouc bring the figure down to 100 ft. per second.

It will be profitable at this juncture to again refer to the volocity of sound in air, which we know to be about 1,100 ft. per second at an ordinary mild temperature. The problem presented to us is to altogether stop this velocity, and consequently the propagation of sound. This can certainly be done by a thick sheet of caoutchouc, but there are very many reasons why that substance should not be used to any large extent in buildings—notably on account of conflagrations, and it is expensive.

Let us approach the sound-proof partition wall from another standpoint. We know that if a medium through which sound passes is heterogeneous in composition, the waves of sound are reflected on the different surfaces of each heterogeneous substance. The reflection from so many different points and the returns being given at such varying intensities (see previous articles for explanation of this), the different phonetic beams tend to neutralise each other, and so to enfeeble the sound.

Putting together what has been said in the last two paragraphs, it is evident that the sound-proof partition problem will be best solved by constructing the partition of loosely-compacted, fine-grained but angular fragments of the greatest variety of hard and soft substances mixed that can be found at a reasonable price. Minute pieces of cork, sawdust, grains of sand, shavings, cinders, and coke-dust might be mixed with granite sand, sand, slag-dust, and the like, but not compacted. We shall be greatly misunderstood if these heterogeneous substances are cemented in any way to form the wall; they need not even be rammed in very tightly, for the chief object in view is to cause the phonetic beams to be reflected and doubled back on themselves. If the wall be cemented throughout, it, of course, acts as a heterogeneous solid, which is better than an uniform solid, it is true, but not as good as looser materials of varying kinds. We all know of the old method of rendering walls and ceilings sound-proof by packing in sawdust or shavings; it is necessary to go a step farther, as we see, to get the best results, though given sufficient thickness the sawdust does well enough. Our object is to show that, where economy in space is a factor the other substances may also be used, and the wall need not be as thick as though sawdust alone were employed.

Of course, we are well aware of a large number of substances, mostly artificial stones and slabs, or chemically prepared saw-dust and the like, which are used in the making of walls said to be rendered sound-proof thereby, and we daresay that many of these substances are of much value. But all that have come

under our notice have either been of a fairly homogeneous character, or have been compacted or cemented into more or less solid blocks. About a fortnight since we were present at some experiments where a partition wall which turned out to be fireproof (as was anticipated) was also said to be sound proof. It was very evident, from a mere casual inspection, that the material was fairly homogeneous in composition, so we paid special attention to the non-acoustic property referred to, and found that it was not much more sound-proof than any ordinary 3-in. wall would be. It certainly would not stop musical sounds from penetrating, and we take it that that is one of the prime objects of getting a sound-proof partition—as in flats, for instance.

In regard to the construction of the facings of sound-proof partitions, there must, of course, be something of a fairly solid character. If wood is employed it is best, though more expensive perhaps, to line the walls with thin strips cut parallel with the direction of the grain. We do not know whether this is a novel idea or not, but it is a legitimate deduction from the results already detailed as to the influence of the grain or fibre of wood in conducting sound or determining its velocity. It is desired to conduct the sound not in the direction of going through the wall, but at right angles to it and parallel with the surface of the wall. The general tendency with such strips would be to conduct the sound upwards and downwards, and to prevent penetration through the ceiling or the floor, as the case may be, it would seem desirable to make the long, thin strips stop within an inch or so of the ceiling and the floor, and to line the spaces thus left with a kind of parqueting, the small pieces of wood being cut so that their outward faces were disposed diagonally with reference to the prime direction of the grain of the wood. These two strips of parquetry should act as "cut-offs" to the sound travelling along the long strips lining the main part of the wall.

The reason we speak of strips rather than broad panels of wood for the lining is because not only does the minute space between thin strips impede the travelling of sound, but the continuity of the cross-fibres is interrupted, and there is a corresponding interference in the propagation of sound, the principle of which has already been demonstrated in these articles.

OBITUARY.

M. CHARLES GARNIER.—We have already briefly mentioned the death, on Wednesday the 3rd, of this eminent French architect. The immediate cause of death was apoplexy complicated by some other complaints; but his state of health, and his much altered appearance, had long been a source of anxiety to his friends. Nevertheless, so great was his energy, and so imperturbable his good spirits, that any one who had met him taking his part in the proceedings of the Institute, or serving on Technical Committees connected with the Government or the Municipality, would hardly have regarded him as a man whose life was in a precarious state. His unexpected death is a great loss to French artistic circles, not only on account of his artistic gifts, but also for his personal qualities—his unwearied activity, his kind and amiable nature, and his gift of humour. At the time when the Gold Medal of the Institute of British Architects was presented to him, we gave an account of M. Garnier's works and career, the main facts in regard to which may however be briefly summed up here. Garnier was born at Paris on October 6, 1829. In 1842 he entered the Ecole des Beaux Arts, where Hippolyte Lebas was his instructor, and at the age of twenty-three gained the Prix de Rome. He made use of the money accruing from this scholarship to travel in Italy and Greece in company with Edmond About, and visited Constantinople in company with Théophile Gautier. In 1853 he was commissioned by the Duc de Luynes to make studies for restorations of the tombs of the Angevines in Naples, Sicily, and Calabria. On his return to Paris, in 1854, he was entrusted with the restoration of the Tour St. Jacques. In 1860 he was appointed architect to the City of Paris, and in 1861 entered into the great competition for the Paris Opera House, when his design was unanimously selected, and his name at once became famous. He devoted several years of strenuous and unremitting labour to carrying out the building—in which, as in the case of one or two other great buildings in Paris, great and unexpected difficulties were experienced in the foundations—and had the satisfaction of seeing the façade of it inaugurated in 1867. After this, the overseeing of the decoration of the building occupied most of his time till 1875. He was Honorary and Corresponding Member of no less than seventeen foreign Academies, and was, in 1874, elected a Member of the Académie des Beaux Arts, in place of the late Victor Baltard. In the following year he was appointed architect to the Conservatoire; in 1864 he was created Chevalier of the Legion of Honour, was promoted to be "Officier" in 1875, "Commandeur" in 1889, and "Grand Officier" in 1895. Among his principal works, in addition to the Opera House, may be mentioned the Theatre at Monte Carlo, the Observatory at Nice, the new Circus, the "Cercle de la Libraire," and finally, at the Exhibition of 1889, the remarkable series of historic reconstructions of the human habitation of different eras, which extended along the whole front of the Champ de Mars, illustrating various types of habitation, from the cave to the French Renaissance "maisonnette." The historical value of the exhibit was over-rated by the French critics; archæology was not, after all, Garnier's strong point; but it showed a remarkable versatility and readiness, and was at all events both picturesque and suggestive. The funeral ceremony took place on Saturday last, first at the Church of St. Severin, and afterwards at the Mont-Parnasse cemetery. In accordance with French custom on the interment of an eminent man, addresses in honour of his memory were delivered at the grave; M. Larroumet speaking in the name of the Department of Public Instruction and Fine Art, M. Frémiet representing the Académie des Beaux Arts, M. Alfred Normand speaking in the name of the Société Centrale des Architectes, M. Boisseau for French artists generally, and M. Roussy for the "Architectes Diplomés."

MR. R. W. COLLIN.—The death of Mr. Robert W. Collin, a Warrington builder and contractor, took place suddenly on the 9th inst. The deceased was 62 years of age.

MR. W. G. RICHARDS.—The death of Mr. William George Richards, builder, of Chipping Hill, Witham, took place recently, after a long illness. The deceased was a member of the Urban District Council from its formation until the last election, when he retired on account of failing health.

GENERAL BUILDING NEWS.

PARISH CHURCH, GWYNFE, CARNARVONSHIRE.—The foundation-stone has just been laid at Gwynfe of a new parish church. The church, the site of which is 30 yards or 40 yards to the north-east of the old church, is being erected by a local contractor, Mr. Daniel Price, of Llangadock, from designs by Mr. E. H. Bruton, architect, Cardiff, and the total cost will be about 1,600*l*. It will accommodate about 250 worshippers.

CHURCH, LLANTRISSANT.—The foundation-stone has just been laid of a new church at Llantrissant, Anglesey. The church will be built in the Perpendicular style, from designs by Mr. P. Shearson Gregory, architect and diocesan surveyor, Bangor.

KIRTLE PARISH CHURCH, EDINBURGH.—This church was reopened on the 4th inst., after alterations and improvements. The alterations have made the church entirely a new one, with the exception of its walls. Considerable additions have also been made, a tower, with exit porches, having been built at one end, and an apsidal chancel at the other. The old interior, which was wide in respect to its length, had a flat plaster ceiling. This has been changed to a timber ceiling open to the ridge. The greater part of the gable wall has been removed, and the entrance to the chancel is under a wide and lofty arch in chiselled stone, partly carried by three corbel pillars. Two stone steps lead up to the chancel, which is lighted by three lancet windows. An organ chamber enters off the chancel at one side, and opposite is the door to the vestry. The floor of the chancel and organ chamber is laid with encaustic tiles. The pulpit is placed in close proximity to the vestry door, and the seating (in three divisions) is in open benches, mostly in pitch pine. The walls are tinted primrose yellow, and the glazing is in leaded panels of cathedral tinted glass. A window by Messrs. Clayton & Bell has been erected, as a memorial, in one of the large side windows, having for its subject, "Christ, the King of Kings." The church is heated with hot-water pipes. The architects were Messrs. Hardy & Wight, Edinburgh.

ST. CUTHBERT'S NEW CHURCH, MIDDLESBROUGH.—The new Church of St. Cuthbert's, Middlesbrough, will accommodate over 800 people, and the cost of erecting the building is estimated at 8,500*l*. It is to be built of stone. The architect is Mr. Temple Moore, London, and the builders are Messrs. Harrison Bros.

CATHOLIC CHURCH, BIRKDALE, SOUTHPORT.—On the 7th inst. the new Church of St. Teresa, Everton-road, Birkdale. was opened. The church is built from the plans of Messrs. Sinnott, Sinnott, & Powell, of Liverpool, in the Transitional style, of red Burnley pressed bricks, with red sandstone dressings. It will accommodate 600 worshippers, and the contractors were Messrs. Fairbridge & Hatch, of Birkdale.

HOLY TRINITY EPISCOPAL CHURCH, AYR.—This church is being erected from designs by the late Mr. J. L. Pearson, R.A., London. It is in the Gothic style of the thirteenth century. A part of the church—chancel, side chapel, vestries, and organ-chamber—has been already built at a cost of 4,000*l*. To complete the nave and aisles and the tower to the first stage is estimated to cost upwards of 7,000*l*.

CATHOLIC CHURCH, COLWYN BAY.—The foundation-stone of this church (which is dedicated to St. Joseph), was laid on Wednesday. The building is situate in Conway-road, and has been erected at a cost of 8,000*l*. The total cost of the land, building, and the furnishing and decoration of the interior will amount to about 12,000*l*. The style is Gothic, and the building, which will be of stone, will afford sitting accommodation for 600. Immediately adjoining the church, but facing Brackley-avenue, a presbytery will also be erected, and it is intended that the church and the presbytery will be completed by May next year. The architect is Mr. R. Curran, C.E., Warrington, and the contractor Mr. Thomas Brown, Chester.

NAVE, ASTON CHURCH, BIRMINGHAM.—On the 6th inst. the foundation-stone of the nave of St. James's Church, Aston, was laid by Sir John Holder, Bart. In March, 1895, the iron structure which formed the nave of the church was blown down, and since then efforts have been made to erect a new and permanent building, the total cost of which will exceed 4,000*l*. The new nave will be built mainly of brick, with stone dressings, and is designed with the idea that a tower will eventually be put up at the south-west corner. The architect is Mr. J. A. Chatwin, of Birmingham.

CHURCH, BRYANSTON, DORSETSHIRE.—A new church has been erected at Bryanston to take the place of the old parish church. The church has been almost entirely built of materials obtained from the demolished building, and consists of a nave, chancel, a short transeptal north aisle—known as the Portman aisle—a south aisle extending the full length of the nave, an organ-chamber on the south side, a vestry on the north side behind the choir, and a square western tower. The walling, both internally and externally, is faced with ashlar of Portland, Chilmark, and Tisbury stone, and the slightly roughened face of the old stonework, after being renewed, has been preserved as much as possible. A font of Hopton woodstone with a stem of Torquay marble, has been placed in the western end of the south aisle. The roofs of the nave, chancel, and aisles, as well as the ceiling under the ringers' loft of the tower, are of oak. Naunton stone slates form the external covering of the nave and chancel roofs, whilst the aisles and tower roofs are covered with cast lead, and the vane post of the tower with sheet copper. The flooring of the gangways of the nave and aisles is of old stone paving, with wood-blocks beneath the seats. These seats are entirely of oak. The chancel and sanctuary floors are laid with alternate squares of black and white marble. Portland stone has been used for the window mullions, tracery, and the rest of the dressed stone work. In the chancel the stalls and the screens behind them, as well as the woodwork across the arch of the organ chamber, are of oak, the ends of the stalls being carved in fleur-de-lys terminals, and having carved shields bearing the sacred monogram and the crown of thorns on their western faces. The east end of the chancel is panelled in oak, and behind the carved oak altar table is a retable. The pulpit stands on the north side of the chancel arch, and opposite to a new brass eagle lectern. A new organ has been placed in the chamber on the south side of the chancel. This projects through an archway into the chancel, its front being curved forward above the choir stalls. The motor which blows the organ is placed in a chamber below the instrument, and this, as well as the electric lighting of the church, is worked by means of a cable from the electrical station about a quarter of a mile away. The lighting of the church is effected by electricity. The installation is the work of Messrs. Christian & Phipps, of Hampton Wick, and the fittings have been made by Messrs. J. Powell & Son, of Whitefriars, from the architect's designs. The stained glass east window is of five lights. This was designed by Mr. R. Anning Bell and carried out by Mr. A. J. Dix. The centre light is occupied by a representation of the Crucifixion, and the right and left lights contain figures representing SS. Mary and John. The outer lights are occupied by figures of SS. Peter and James. The tower contains a peal of six new bells. They were supplied by Messrs. Warren & Sons, of Cripplegate. The tower in which they are situated is square in plan and has an octagonal stair turret on the south-east angle. It terminates in a battlemented and panelled parapet. The builders are Messrs. Wheeler Brothers, of Reading. The wrought-iron weather vane is the work of Mr. F. Chubb, of Hampstead, whilst the glazing of the windows has been done by Mr. J. Jennings, of Clapham. The carving in wood and stone was entrusted to Mr. L. A. Turner, of London, whilst the low-pressure hot-water heating apparatus—which comprises ventilation—has been carried out by Messrs. Hayen & Son, of Trowbridge. The architect was Mr. E. P. Warren, of Westminster.

NEW CHURCH, ABERDEEN.—Contracts have just been entered into for the erection of a church—to be called Bon Accord Congregational Church—in Bon Accord-terrace, near Union-street, Aberdeen. The building, which will be 52 ft. 6 in. wide (having gable elevation to the terrace), 59 ft. deep, and 53 ft. high, will be of granite. The church, with hall underneath, will cost 4,000*l*. In addition, three tenement houses, with shops on the ground floor, will be erected on the site acquired by the congregation. These, which have also been contracted for, will probably cost 3,600*l*. Mr. John Rust, Aberdeen, is architect.

New Free Church, Rothes.—It is proposed to erect a new Free Church at Rothes. The architect is Mr. G. Sutherland, and his design was selected in a recent competition for the church. The plan shows a building seated for 400 on the ground floor, with an end gallery in addition. At the rear of the main building there are a hall, session-house, and vestry.

Board School, Anglesey.—A new Board school has been opened at Brynsiencyn, Anglesey. It was erected by Mr. H. Jones, Brynsiencyn, from the designs of Mr. R. Davies, architect, Bangor, and will accommodate 220.

Ragged School, Manchester.—The Charter-street Ragged School, Manchester, is to be considerably enlarged. When the new building was erected in 1892, the old ragged school, which faces Charter-street, was left standing. The old school adjoins the newer part of the institution. It will be pulled down, and the ground on which it stands rebuilt upon. The newer school and girls' home, with the old school, occupy a small square, bounded by several streets, and the committee have bought two cottages in Ashley-lane, one of the narrow thoroughfares which run at right angles from Charter-street and surround the square. These cottages will be pulled down for the purpose of the extension. On the ground now covered by the old ragged school there will be built an addition to the newer school and the working girls' home. The basement of the new building will contain a kitchen and boiler-house and the other store-rooms necessary for carrying on the work of the ragged school. The new building will be in four stories. On the ground floor there will be placed near the entrance, which is at the corner of the building, an office for the use of the manager of the institution. There will also be stores and a room in which food may be prepared for use. On the next floor rooms will be provided for the matron of the home for working girls, and store-rooms for the home. Higher still there will be found, when the building has been completed, two floors which will contain additions to the girls' home. These will include a kitchen, a laundry with a drying stove, and still higher an extension of the bath-room accommodation and the cubicles of sleeping apartments. On the piece of ground in Ashley-lane now occupied by the cottages a house will be erected for a caretaker for the whole institution. Two club-rooms for use as part of the ragged school scheme will also be built. Above the club-rooms, and wholly separated, there will be another extension of the home for girls, consisting of sleeping and other apartments. The highest part of this portion of the new building will be so built as to form a play or recreation ground, covered as a protection from rain. The estimated cost of the extensions is 4,600*l.* The architects are Messrs. Maxwell & Tuke, of Manchester.

Marlborough Hotel, St. James's.—The new buildings, at the corner of Ryder and Bury-streets, are nearly completed. They are built of stone and red brick by Messrs. John Bennett & Co., of Guilford-street, from the plans and designs of Mr. G. D. Martin.

New Bond-street.—New premises have been begun upon the site of No. 126, west side. Messrs. H. & E. Lea, are the contractors, and Messrs. Lindsay, Neal, & Co., of Paddington, will supply the constructional steel work. The architect is Mr. E. Keynes Purchase.

Workhouse Infirmary, Redruth.—A new infirmary has just been completed at Redruth, adjoining the workhouse. The building just erected comprises the women's section and administration block. It includes on the ground floor a main ward, 48 ft. by 24 ft.; separation ward, 16 ft. by 12 ft.; day room 20 ft. by 16 ft., with ward kitchen and necessary offices, consulting-room for medical officer, and dispensing store. On the first floor are the main ward, 48 ft. by 24 ft.; four wards for special cases, and ward kitchen. The nurses' apartments are placed over the administrative block on the second floor, and consist of two bedrooms, with large sitting-room and store. A glazed stoneware bath is placed on each floor, and an enamelled iron bath adjacent to the nurses' rooms. All the rooms are accessible on each floor from a main corridor, 6 ft. wide, the internal and also the emergency external stairs being of granite. The building has been designed and carried out under the supervision of Mr. Sampson Hill, Redruth. The contract for masonry was let to Mr. T. Opie, for carpentry to Mr. W. C. Hodge, and for plumbing and heating to Mr. W. G. Wilton.

Cottage Hospital, Leominster.—The Leominster Hospital Committee have decided to erect a new cottage hospital and nurses' home in South-street, Leominster. The accommodation allows for five beds, and a separate building is provided for the matron and nursing staff. Mr. Ernest G. Davies, of Hereford, is the architect, and the work is to be put in hand immediately.

Constitutional Club, New Leeds.—The foundation stone has just been laid of a Constitutional Club at New Leeds. The site is at the corner of Shepherd's-lane and Roundhay-road. Mr. C. D. Swale (Messrs. Swale & Mitchell) is the architect of the new building, and the principal contractors are Messrs. J. T. Wright & Son.

Hotel, Llandrindod Wells.—The new Gwalia Hotel, Llandrindod Wells, which has just been opened, has been erected by Mr. D. Jenkins, of Swansea, from designs furnished by Messrs. Swash & Bain, of Newport. The style is English Renaissance. The first, second, and third floors are utilised for bedrooms, which number about fifty-eight, as well as bath-rooms and lavatory accommodation. A passenger lift worked by electricity is placed near the entrance and travels to the top floor. The whole of the premises are supplied with electric light, and the central hall and all the corridors are heated when required by hot-water coils. The total cost of the building, including land, &c., has been 15,000*l.*

Improvements at Hutton Castle, Berwickshire.—For some time past Lord Tweedmouth has been carrying out improvements upon the building known as Hutton Hall, Berwickshire, the name of which has been changed to Hutton Castle. The old tower has been made habitable, the centre portion of the building has been raised one story, and four pepperbox turrets placed at the corners; the west wing has been extended, and a new range of kitchen offices added. The new portions have asphalte roofs with embrasures and parapets. The interior generally is altered to some extent, and includes additional bedrooms, as well as accommodation for servants. Mr. Alexander Ross, the estate overseer, designed the roads. About 1,000*l.* has been expended in laying out the grounds, the contractors being Messrs. Smith & Son, Derby. At the west drive a lodge has been constructed. The contractors were:—Mason, Mr. Henry Steel, Greenlaw; joiner, Mr. James Crombie, Duns; plumber, Mr. Ford, Coldstream; slater and plasterer, Mr. Wm. Fortune, Chirnside; painter, Mr. Hume, Duns. Mr. Thomson, C.E., Edinburgh, has engineered the sanitary work. For the lodge the contractors were:—Mr. Patterson, Allanton, mason; Messrs. Edgeley & Son, Chirnside, joiners; Mr. Thomas Fortune, Chirnside, plasterer; and Mr. Peter Newbigging, Duns, plumber. Mr. G. G. Duns, of Duns, was the architect.

Branch Public Library, Stockbridge, Edinburgh.—At the Edinburgh Dean of Guild Court, on the 4th inst., an application on behalf of Thomas Nelson's Trustees to take down buildings and erect a branch public library at Hamilton-place for the Stockbridge district was granted. The site of the new library is at the corner of Hamilton Place and Deanbank-street, and the building will consist of one story, and will be lighted throughout from the roof. The front entrance will be in Hamilton-place, to the right of which will be the Nelson Hall, in which will be the recreation and the news rooms. The library and the counter for giving out books will occupy the centre of the building, and under the octagonal tower, which will be erected at the corner, and extending along Deanbank-street, will be the reading-room. The new library will adjoin Stockbridge Public school. Messrs. Lessels & Taylor are the architects.

Children's Ward, Dewsbury and District Infirmary.—A children's ward has just been opened at this institution. Mr. A. H. Kirk was the architect.

Clock Tower, Colmonell, Ayrshire.—The presentation of the Victoria Diamond Jubilee Clock Tower to the Public Hall Trustees, Colmonell, took place recently. The tower was built from plans prepared by Mr. Allan Stevenson, architect, Ayr.

Liberal Club, Huddersfield.—On the 6th inst. the foundation-stones were laid of a new Liberal Club in the Crosland Moor district of the borough of Huddersfield. Mr. J. E. Lunn, of Milnsbridge, is the architect.

Proposed Workhouse, Hastings.—At a recent meeting of the Hastings Board of Guardians the question of the proposed new workhouse came up for discussion. A Committee of the Board had met the Local Government Board, and under their guidance Messrs. Jeffrey & Skiller, architects, Hastings, had prepared plans for a building to cost 41,200*l.* The Clerk read the report of the Committee, which set forth that the proposed building would be erected on the nine acre site, and meet the requirements of the Local Government Board, and provided the accommodation agreed upon by the Board, with the exception of thirty-six women, owing to the room in the women's pavilion being decreased. The estimate did not include fencing or an engine for the laundry. The latter would bring the total cost up to 41,723*l.* The architects' report showed that accommodation was provided for 154 men (56 able-bodied and 98 aged), 184 women (86 able-bodied and 98 aged). Other accommodation included was that for 44 vagrants. In the administrative block there were master's and matron's rooms, dining-room for 400, capable of being increased to 500, kitchen for 500, with fittings for 350, and space for an additional 150. The laundry and wash-house was on the same scale. The Chairman moved the adoption of the plans and report, and Mr. Walder seconded the proposition. The motion was carried *nem. con.*

The Condition of York Minster.—In a report on the state of the fabric of York Minster, the Dean of York says:—"The work on the south side of the nave has been completed, and the grand pinnacles restored in all their pristine beauty. This has been most carefully carried out, all existing details have been preserved, and those which have crumbled away as far as possible accurately reproduced. . . . . Now the scaffolding has been removed to the east end, and another equally expensive and necessary work begun. . . . . The work at the east end will be completed in about twelve months; then we shall commence a similar work at the west end, where immediate attention is required to the ornamentation thereof, much of which is in a dangerous condition." . . . .

Sanitary and Engineering News.

Sewerage of Audenshaw.—The Audenshaw Urban District Council have approved and adopted the proposals of Mr. J. P. Wilkinson, A.M.Inst.C.E., Manchester, for the sewerage of the district. The estimated cost is 14,500*l.*

New Goods Station, Manchester.—The first portion of the new Deansgate goods depôt of the Great Northern Railway Company in Manchester has been opened for the reception of traffic. The new goods station adjoins the Manchester Central passenger station—the Cheshire Lines Joint Committee's station—and it is bounded on the west by Deansgate, on the north by Peter-street, and on the south by Great Bridgewater-street, from all of which streets it has entrances. Starting from a junction with the four-track road which runs into the Central passenger station, the rails communicating with the new goods station are carried by a girder bridge over Deansgate, and they enter the site of the depôt at a considerable height above the ground level. The approach road, which is about 300 yards in length, immediately spreads out into six tracks carried on an upper floor supported upon steel stanchions, at the base of which stands a very large shed for use in loading and unloading trucks. Above this shed a warehouse of three more floors, 80 ft. in total height, is in course of construction; and upon each side of the shed branch lines run down at a moderate gradient to the ground floor of the depôt, which, like the upper floor, is laid out with tracks and banks for the shunting, marshalling, loading, and unloading of trucks. Thus the area of the site, which is nearly seven acres, is utilized twice over for the purposes of a goods terminus, whilst it also provides the foundation for very extensive warehouse accommodation. Arrangements have been made to light the depôt throughout with the electric light. The whole work has been carried out by Messrs. Robert Neill & Sons, of Manchester, under the supervision of Mr. A. Ross, the Great Northern Company's engineer-in-chief.—*Times.*

Glasgow Sewage Scheme.—The Sub-Committee of the Glasgow Corporation appointed to visit different cities and towns in England and inspect the arrangements in use for the treatment of sewage and the disposal of sewage have issued their report. Among other places visited were London, Manchester, and Salford. As an outcome of their investigations, the deputation are impelled to the conclusion that in the design of the new sewage works at Dalmuir and Braehead, it is imperative to continue the use of methods where experience has proved practicable on a large scale, and there seems no room for doubt that chemical precipitation alone is the means to adopt, and the most economical and satisfactory method of disposing of the sewage is to send it to sea. While implying no disparagement to the efficiency of the methods in use at Dalmarnock—which are the only possible means available under the circumstances—the deputation are satisfied that these methods cannot be advantageously applied at Dalmuir or at Braehead, where the volumes of sewage to be ultimately treated are so much larger that it would be hopeless to look for a market for any form of pressed sludge, no matter how high might be its estimation among agriculturists. The initial volume of sewage to be treated at Dalmuir is estimated at 27,000,000 gallons of dry weather flow per day, which will ultimately be increased to about 48,000,000. Supposing the works at Dalmuir and Braehead to be in operation, the combined daily product of sewage would not for some time exceed 1,200 tons a day, the ultimate quantity being about 2,300 tons. Two barges would for years suffice for the removal of the whole sludge, though eventually a third would require to be added, and the sub-committee have little doubt that the sludge can be disposed of in this manner more economically than by pressing. The sub-committee think that no time should now be lost in commencing the undertaking.—*Glasgow Herald.*

North Sunderland Railway.—The North Sunderland Light Railway, which has been in course of construction during the last two years, was opened for goods traffic on the 1st inst. The line, which is just four miles in length, joins the North-Eastern main line about 100 yards north of Chathill Station. There are two stations on the line, a small one at North Sunderland and a larger one at the Seahouses terminus. The work of construction was begun by Mr. A. Haslett, of London, but has been chiefly carried out by the Messrs. Whittaker Bros., Leeds, Mr. J. A. Thornton, of Manchester, being the engineer.

Public Improvements at St. Helens.—On the 5th inst. Colonel A. J. Hepper, an inspector of the Local Government Board, held inquiries at St. Helens Town Hall into applications by the St. Helens Corporation for sanction to borrow 900*l.* for works of paving, 2,500*l.* for the construction of a storm water overflow sewer in Liverpool-road, and 5,000*l.* for the construction of a subway in Church-street and Ormskirk-street. The Borough Surveyor (Mr. G. J. C. Broom) produced plans of the proposed subway, which he explained to the inspector. The scheme for the construction of a

storm water overflow sewer in Liverpool-road district was next placed before the inspector.

PUBLIC IMPROVEMENTS, LLANDUDNO. — Mr. Walter Ducat held an inquiry on the 2nd inst. at Llandudno respecting an application by the District Council to the Local Government Board to sanction loans of 2,350*l.* for water undertaking, 1,400*l.* for street improvements, 550*l.* for the provision of shelters on the promenade, 250*l.* for sewerage works, and 225*l.* for the erection of a fire station at Craigydon. The Engineer (Mr. E. Paley Stephenson, C.E.), in explaining the water extension, said that it was proposed to raise 20,000 gallons, the motive power being a gas engine. It would serve a district of 100 houses, but the scheme provided for 550. The capacity of the proposed reservoir would be 50,000 gallons. Mr. Humphreys, the surveyor of the Mostyn estate, said that he was present to give every facility for the carrying out of the scheme.

STAINED GLASS AND DECORATION.

MEMORIAL WINDOW, LOWESTOFT. — At the Methodist Free Church, London-road, Lowestoft, was recently unveiled two new stained glass memorial windows, which have been erected in the church in memory of the late Henry and Mary Tuttle. The windows are in the east and west ends of the building, and are the work of Mr. J. Jennings of London.

WINDOW, ASBURY CHAPEL, HANDSWORTH.—A memorial window to the late Mrs. H. S. Richards, in the chancel of the Asbury Memorial Church, Handsworth, was unveiled on the 31st ult. The window was designed and executed by Mr. T. W. Camm, of Smethwick. The chancel is being decorated from Mr. Camm's design.

WINDOWS, ST. JAMES'S CHURCH, CRINKEN, BRAY, IRELAND.—On the 29th ult., at the Church of St. James, Crinken, near Bray, three new stained-glass windows were dedicated. The first is a memorial to the late Archbishop Plunket, erected by the members of the congregation, and constructed by Messrs. Heaton, Butler, & Baynes, of London. The second window is a memorial to the late William Eaton Caldbeck, M.A., J.P. This window was also executed by Messrs. Heaton, Butler, & Baynes. The third window, which is not yet quite completed, has been presented by Miss Magan. The stained glass is supplied by Mayer, of Munich. The stonework for all the windows has been executed by Mr. Beckett, Ringsend. The architects are Messrs. Rawson, Carroll, & Batchelor.

PORTRAIT MEDALLION, FOLKESTONE. — The memorial which has just been unveiled by the Rural Dean to the memory of the late Vicar, Rev. Claude Bosanquet, M.A., consists of a portrait medallion in statuary marble, set in an architectural framework of alabaster. It was executed by Mr. J. N. Forsyth, of Finchley-road. The architectural portion was designed by Mr. W. A. Forsyth.

WINDOW, COLTNESS, LANARKSHIRE. — Messrs. Stephen Adam & Son, Glasgow, have just erected in Coltness Memorial Church a stained-glass window, showing four figure subjects principally taken from the Book of Nehemiah and the New Testament.

FOREIGN.

FRANCE.—The Prix de Rome in architecture has been awarded to M. Léon Chifflot, pupil of MM. Daumet, Girault, and Esquié.——M. René Binet, the architect, has been commissioned to design the monumental entrance to the 1900 Exhibition, next the Place de la Concorde. It will form a semi-circle with sixty entrance gates for the public, and will be surmounted with a cupola decorated with faïence.——At the Gobelins manufactory an interesting exhibition has been opened of models, decorative panels, cartoons, &c., executed by the tapestry artists of the establishment.——The repair or partial rebuilding of the well-known façades of the Ministère de Marine, facing the Place de la Concorde, is to be shortly carried out; a work which has long been needed.——M. Camus has been appointed architect for the new buildings in connexion with the Department of Public Instruction, at the corner of Rue de Grenelle. The cost is estimated at 700,000 francs.——At the new Circus there is an exhibition of models, drawings and paintings by M. Falguière.——The foundations of the Alexandre III. bridge are now completed, and the masonry superstructure is in active progress. A temporary foot bridge is to be placed over the Seine at this point, to be removed when the main structure is completed.——The architectural Department of the Paris Municipality is about to undertake the restoration of the Church of St. Médard, one of the oldest churches in Paris.——M. Théodore Lambert has obtained the first premium in the competition opened at Besançon for the restoration of the Hôtel de Ville.——The President of the Republic has laid the first stone of the breakwater for the new basin at Havre.

HOLLAND.—Thirteen hundred carpenters of Amsterdam have gone out on strike. They had demanded higher wages and insurance against accidents. The masters declined to increase their pay, and they accordingly ceased work, all efforts at a settlement on any other terms proving fruitless.

JOHANNESBURG. — The designs executed by Messrs. Arthur & Walter Reid, architects, of Cape Town and Johannesburg, have been selected for the rebuilding of the Wanderers' Club, Johannesburg, which was destroyed by fire some months since. The cost of the new structure will be upwards of 20,000*l.* The great hall will be 120 ft. long and 80 ft. wide.—*Standard and Diggers' News.*

MISCELLANEOUS.

"SPECIFICATIONS FOR BUILDING WORKS."—Our attention has been called to the fact that in Mr. Farrow's book on Specification for Building Works, lately issued from this office, a chapter on electric wiring contains a copy of a specification prepared by Mr. Adrian Collins, A.M.Inst. C.E., of 61, Old Broad-street, E.C., for works which have been executed under his supervision. This copy was inserted in the book without the knowledge of the publisher of the book or of the author. Immediately on the matter being brought to the notice of the publisher he caused an inset to be inserted in the book stating the facts of the case.

A PALACE FOR THE ARCHBISHOP OF CANTERBURY.—A portion of the money derived from the recent sale of Addington Park is to be applied to providing a palace at Canterbury, within the precincts of the Cathedral. The Ecclesiastical Commissioners have sanctioned an arrangement for making additions on its north and east sides to the house occupied by the late Mr. Henry Austin, Surveyor of the Cathedral; the Dean and Chapter will re-convey to the See the property which in olden time formed part of the Archbishops' palace.

FETTER-LANE. — The "White Horse" tavern, Nos. 89 and 91, on the street's west side is now nearly demolished. It was a famous coaching-house in the old days, and the starting place for many favourite coaches that ran to Oxford, Cambridge, and other large towns in the east and west of England. Of late years it degenerated into a common lodging-house. To the south stood a quaint old gabled house, No. 92, and Norwich-court, formerly Magpie-yard. Both the house and the north side of the court have been demolished for a new thoroughfare, renamed Norwich-street, leading into Furnival, formerly Castle, street, Holborn.

MEMORIAL OBELISK TO THE ETTRICK SHEPHERD.—On the 28th ult., at Ettrickhall, Selkirkshire, a memorial of the Ettrick Shepherd, which has been erected on the site of the poet's birthplace, was unveiled. The memorial takes the form of an obelisk, about 20 ft. in height, with a bronze medallion of Hogg on the central stone (by Mr. Hubert Paton), and was built by Messrs. John Marshall & Sons, Hawick, from a design prepared by Mr. Heiton, architect, Perth.

TINTERN ABBEY AND RAGLAN CASTLE.—Monmouthshire County Council, at a meeting held at Newport on the 3rd inst., on the motion of Sir Henry Jackson, Bart., appointed a committee for the purpose of acquiring the historic ruins of Tintern Abbey and Raglan Castle for the county.

PARLIAMENT-STREET IMPROVEMENT. — At the Town Hall, Westminster, on the 5th inst., Mr. Troutbeck and a special jury heard the case of The Aerated Bread Company, Limited, *v.* Her Majesty's Office of Works—a claim for about 20,000*l.* compensation in respect of their leasehold and trade interest in Nos. 31 and 32, Parliament-street, and No. 17B, St. George-street, Westminster, used as a refreshment depôt on the ground floor and basement. Mr. Littler, Q.C., and Mr. Reader Harris, Q.C., appeared for the claimants; the Attorney-General, Mr. Danckwerts, and Mr. Peacock represented the Office of Works. The first witness, Mr. Edward Tewson (Messrs. Debenham, Tewson, Farmer, & Bridgewater), stated that the premises in question were let on lease for a term of which ten years was still unexpired at a rental of 950*l.*, and that they were now worth 1,600*l.* a year, showing a profit rental of 650*l.* a year. He capitalised that on the 5 per cent. table (7·7 years' purchase) 5,005*l.*, and added the customary 10 per cent. for compulsory sale, 500*l.*, making together 5,505*l.* The net profits of the depôt were 3,260*l.* per annum, and after deducting the profit rent, 650*l.*, and adding 300*l.* for underlettings of the upper part of the premises, he arrived at a profit of 2,910*l.*, which should be capitalised at five years' purchase, 14,550*l.*, to compensate the company for loss of the business. His total was thus 20,055*l.*, to which he added an agreed sum of 410*l.* in respect of the fixtures, making altogether 20,465*l.* Mr. Henry Charles Trollope (Messrs. Trollope & Sons) confirmed Mr. Tewson's evidence. The case was adjourned until the 9th inst. On behalf of the Crown, several expert witnesses were called, including Mr. Robert Vigers (President of the Surveyors' Institution), Mr. Horne, Mr. James Green, and Mr. Ryde, whose valuations of the leasehold interest, including two years' purchase of the net trade profits of the depôt, which were put at 1,255*l.* per annum, varied from 4,420*l.* to 4,637*l.* The jury awarded 9,490*l.* compensation.

MURAL DECORATIONS, ROYAL EXCHANGE.—Under the auspices of the Gresham Committee and the Mercers' Company, Messrs. W. Cubitt & Co. are preparing niches on the walls of the ambulatory of the Royal Exchange for the reception of further mural decorations. The following scenes will form the subjects of the various designs:—William the Conqueror granting a charter to the citizens of London (Mr. Seymour Lucas, R.A.), the gift of the Corporation; the Opening of the Royal Exchange by Queen Elizabeth (Mr. Ernest Crofts, R.A.), the gift of the Mercers' Company; the Crown of England being offered to Richard III. at Baynard's Castle (Mr. E. Goetze), the gift of Mr. Carl Meyer; a Scene from the Great Fire of London, 1666 (Mr. Stanhope Forbes, A.R.A.), the gift of the Sun Fire Insurance Company. These pictures are fixed by Messrs. Charles Roberson & Company's new process of "Marouflage," and are painted on a new medium termed spirit fresco. The colours ground in this medium are used in a somewhat similar manner to ordinary oil colours on a specially prepared, highly absorbent canvas, which, when the picture is finished, is laid solidly on the wall. It is expected that the Lord Mayor will unveil these panels in September, and it is stated that the cost of each is upwards of 500*l.*—*Times.*

CRYSTAL PALACE SCHOOL OF PRACTICAL ENGINEERING.—The certificates awarded by the examiners for the summer term of the present year to the students of the Crystal Palace School of Practical Engineering were announced on the 4th inst. in the lecture theatre of the School. The chair was taken by Mr. George Byland Roche, Consulting Engineer to the London, Chatham, and Dover Railway Company. Mr. R. G. Hodson read the reports of the examiners. Mr. Percy J. Ogle stated that he was satisfied that the course prepared for the students in the Mechanical Section was one which could scarcely be improved on as a preliminary education to those adopting any branch of the engineering profession. As thirty out of thirty-six who were eligible for examination had passed the minimum, he doubted if this average had ever been exceeded. Mr. David Gravell, Examiner of the Civil Engineering Department, was of opinion that the standard now attained by the majority of the students was distinctly higher than in 1892, when he acted in the same capacity. Reporting on the Electrical Department, Mr. E. M. Lacey said that the papers generally showed considerable ability and application, and that the practical work was greatly above the average. The Chairman expressed his high sense of the value of the training given in this school. He then distributed the certificates to the students, and Mr. W. Green, one of the Palace Directors, expressed the thanks of the company to the examiners for their services. He spoke of the Engineering School as one of the most important institutions connected with the Crystal Palace, and recommended all the students to become members of the "Old Students' Society." The three examiners severally returned thanks. A vote of thanks was also given to Mr. J. W. Wilson, who has been principal of the school for over a quarter of a century. Mr. Wilson, in responding, referred to the success which the students in the school had obtained in their profession. A vote of thanks to the Chairman brought the proceedings to a close.

CONFERENCE OF SANITARY INSPECTORS.—The autumn conference of the Sanitary Inspectors' Association has just been held at Newcastle-on-Tyne. The delegates were welcomed by the Mayor, after which Mr. Thomas G. Dee, London, took the chair. On the motion of Mr. Alexander, seconded by Mr. Thomas, London, a resolution was adopted to petition the Local Government Board as to the approaching appointment of the Board for the examination and certification of candidates for the position of sanitary inspectors, and declaring that it was of great importance that the practical experience of members of the Association should be represented on each examination board. Mr. W. Bland, Newcastle-on-Tyne, read a paper on the advantages of sanitary inspection, in which he urged the establishment of a Government board of health, to whom all matters affecting the public health should be referred, and who should have direct control over all local inspectors; the removal of medical officers and inspectors from the fear of local influence; the appointment of competent and trained men as inspectors; and the education of the public in the laws of hygiene and sanitation by the compulsory teaching of these subjects at our schools. Dr. H. Scurfield, Medical Officer of Health, Sunderland, then read a paper on "Testing Ventilation." A paper on "Sanitation in Colliery Districts" was read by Mr. W. F. Curry, Surveyor and Sanitary Inspector, Morpeth. Mr. Curry advocated a better water supply and the provision of a bath-room in the pitman's house. Mr. C. Irvin, River Tyne Port Inspector, read a paper on "Port Sanitary Administration." Twenty-five years ago, he said, there was no systematic inspection of ships, and severe epidemics were brought from foreign countries; but since the new regulations all this had been changed. Mr. W. H. Wells, Chief Sanitary Inspector to the Newcastle Corporation, read a paper on "Suggested Improvements in any future Public Health Legislation." The members of the Association dined together in the evening.

SANITARY DEPÔT, LEEDS.—The new central sanitary depôt, upon which the Leeds Corporation are spending over 30,000*l.*, is situated in Dock-street, to the south of Leeds Bridge. Stabling accommodation is here provided for 168 horses. Offices, store-rooms, and sheds for vehicles are also being built.

Clock, Leicester.—A clock has just been erected in St. Margaret's Church, Leicester, by Messrs. John Smith & Sons, Derby. It shows the time on four dials, and plays the Westminster chimes.

The Sanitary Institute.—At an examination in practical sanitary science, held at Liverpool on July 29 and 30, five candidates presented themselves. The following three candidates were granted certificates in practical sanitary science; H. E. Bellamy, Truro; T. Graham, Birkenhead; T. Summers, M.Inst.C.E., Edinburgh. At an examination for Inspectors of Nuisances, held at Liverpool on the same days, sixty-four candidates presented themselves. The following thirty-seven candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of Inspectors of Nuisances:—J. Allan, Greenock; F. Atkinson, Coppice, Oldham; F. T. Bare, Gravesend; W. F. Bickford, Plymouth; J. H. Brocklehurst, Chadderton, Oldham; A. E. Cheetham, Urmston, Manchester; A. Cliffe, Liverpool; Miss E. Coppock(*L*), Urmston; H. Corbridge, Liverpool; J. Crossland, Bowness-on-Windermere; A. E. Croxford, Liverpool; J. J. Daft, Wilford, Nottingham; W. T. Flood, Warrington; C. H. France, Wigan; M. Garside, Stockton Heath, Warrington; T. Glenn, Daubhill, Bolton, Lancs.; J. T. Green, Walsall; W. Harrison, Kensington, Liverpool; J. Hermann, Dartford; C. F. Hobday, West Norwood Estate Offices; W. J. Jackson, Everton, Liverpool; W. H. Jackson, Aintree, Liverpool; R. J. Langley, jun., Bolton-le-Sands; A. G. Leigh, Chorley, Lancs.; C. F. Marshall, Liverpool; J. Marshall, Little Hulton, near Bolton; J. Moore, Blackpool; S. Partington, Hollinwood; J. F. Rossington, Sheffield; T. Sharps, Seedley, Manchester; H. G. W. Silcox, Bath; A. Smith, Seacombe; J. Walker, Kendal; F. H. Williams, Crewe; O. O. Williams, Penrhyndendraeth; W. J. Winter, Liverpool; G. Winterbottom, Waterhead, Oldham.

The Duties of District Surveyors.—The Battersea Vestry have had under consideration the recent accidents which have taken place on buildings in course of erection and alteration, and have passed resolutions to the effect that (1) all District Surveyors should devote the whole of their time to the duties of district surveying; that (2) District Surveyors should be paid a salary by the County Council, and that all building fees (if continued) should be paid to the County Council direct; and that (3) an office should be provided for the District Surveyor at the local vestry hall, so that he may be brought into closer touch with the Local Authority. These resolutions have now been communicated to the London County Council, and the Battersea Vestry have asked each of the other Local Authorities throughout the metropolis to support them in their attitude to the Council in this respect.

Bradford Building Trades and Stone Exchange.—The second annual meeting of the members of this Exchange took place at the Exchange on the 4th inst., Mr. Ellis Robinson in the chair. It was reported that the first year had been a uniformly successful one, the membership now numbering over 600. The report and balance-sheet were passed, and the following gentlemen were elected members of the committee:—Messrs. Julius Whitehead, Robert Roper, W. H. Vickers, Phineas Drake, and Joseph Baxter.

Electric Lighting, Leigh, Lancashire.—Mr. W. O. E. Meade-King, Inspector of the Local Government Board, held an inquiry on the 9th inst. at the Town Hall, Leigh, into the application of the Leigh District Council for sanction to borrow 25,000*l.* for gasworks extensions and 10,500*l.* for purposes of electric lighting.

Martyrs' Memorial, Canterbury.—The building of the Martyrs' Memorial, which is to be erected at Canterbury, has been entrusted to Messrs. J. Whitehead & Sons, Limited, granite merchants, of Westminster and Aberdeen. Mr. A. H. Campbell, of Canterbury, is the architect.

CAPITAL AND LABOUR.

Plumbers' Strike at Bolton.—The Bolton Master Plumbers' Association decided, on the 2nd inst., to lock out the whole of the men in town and district, pending a definite settlement of the strike at one establishment, where the men left work because of the alleged introduction of non-union labour. The strikers refused to work on a certain job because Liverpool metallic pipeworkers are engaged on it.

Building Dispute, Bristol.—On the 30th ult. the Bristol Master Builders' Association and the Operative Bricklayers' Society met at the office of the Bristol Chamber of Commerce, under the presidency of his Honour Judge Austin, as mediator in the dispute between the masters and operatives. The former body was represented by Messrs. A. Krauss (President), George Humphreys (Treasurer), W. Church, G. Wilkins, G. Downs, E. Walters, and Henry J. Spear (Secretary); and the Bricklayers' Society by Messrs. W. H. Roe, C. Sprague, Walter Bool, H. Prigg, and E. Stock (Secretary). Mr. Stock, on behalf of the bricklayers, submitted his case as to why his society contended they should be entitled to a ½d. per hour extra on September 1 and a ½d. per hour on March 30 next—that it was mainly in consequence of their exposure and the loss of time owing to the severity of the weather during the winter months. Mr. A. Krauss replied to the points raised, and a general discussion ensued. The question of walking time (Rule 8) was fully considered, and Mr. George Humphreys made a statement affecting this question from the masters' standpoint, to the effect that this rule had had very full consideration by the Master Builders' Association in the many meetings between employers and operatives, and was very fully discussed by the Federated Societies before the arbitrator appointed by the Board of Trade. The decision arrived at was agreed to by both employers and operatives, without appealing to the arbitrator for his decision, and he was of opinion that this rule did not press at all hardly on any branch of the operatives. The Bricklayers' Society wished to delete the latter clause, but if such were done it would be manifestly unfair to the employers living outside the two mile radius, inasmuch as some of them would actually have to pay walking time for the men to come to work at their places of business, although the men might have to pass their shop to get to other shops which might be several miles further on, and within the two mile radius. The employer living outside the two mile radius would thus be handicapped in contracting for work inside the boundary. On the other hand, it would also be manifestly unfair to contractors inside the city boundary, inasmuch as work of any magnitude put up for competition near the city would enable a contractor from a distance to employ men on the works, when contractors inside the city would have to pay walking time, and thus allow the contractor at a distance a distinct advantage over a local contractor. Mr. Humphreys said he had been in business some forty years, and had never had a dispute with any of his men on this rule. He always found men seek employment nearest their homes, and had had men leave him frequently to do so. If a contractor had work outside the boundary, away in the residential suburbs, he had to then offer some inducement to get the men to apply for work on the jobs, and he therefore was of opinion that this clause should stand as at present arranged with the other branches of the trade, viz., masons, carpenters, plasterers, painters, plumbers, labourers, &c.—The operatives replied that the masters' requirements were very prejudicial to the bricklayers. His Honour remarked that he was pleased at the good humour that existed between the two parties during the progress of the inquiry, and stated that he would consider the various points raised, and give a reply in writing; and he hoped that both parties would act upon his decision, which he should submit with sincere good will. On the 1st inst. his Honour submitted a statement on the question at issue, in the course of which he said, "After careful consideration I have come to the conclusion that the men will be well advised if they agree to the rules settled by Mr. Hudson and approved by the federated trades. It is clear from the rules themselves that Mr. Hudson intended (at first, at all events) that the rule should apply to the bricklayers as well as to the other trades. In my opinion, the men ought to agree to these rules in their own interests, in the interests of the labourers whose work is dependent upon them, and in the interest of the trade generally. I will shortly give my reasons. As to point 1, it is no doubt true that the bricklayers suffer from loss of time during bad weather, but they have failed to convince me that their loss in this respect is in any substantial degree greater than that of the masons and carpenters. It is to some extent greater, but as against this difference, the bricklayers ought to consider the greater expense of tools in the other trades. As to point 2. It appears to me to be impossible to make any arrangement which will not be open to some objection, because the relative position of the works and of the men's residences must vary in the case of each job undertaken. On the whole, I have come to the conclusion that the objections raised by the masters to the rule as it stands, without the limitation, are graver and of more weight than those raised by the men to the limitation settled by Mr. Hudson. Moreover, the men have failed to convince me that, as bricklayers, they are prejudiced by the limitation to any greater extent than are the members of the Federated Trades who have accepted Mr. Hudson's view. In conclusion, I should like to say why, in my opinion, the men may properly accept Mr. Hudson's rules. In the first place, they will get under those rules prompt and substantial rise in wages. Possibly the masters may see their way to make that rise to take effect immediately, instead of postponing it until September 1. In the next place, it is, of course, better for the men and for everybody else that trade disputes should not be frequently recurring. If the bricklayers were to succeed in obtaining those advantages for which they are now contending, the result would probably be to create amongst the skilled workmen in the federated trades a feeling of jealousy, which would be most prejudicial to the chances of a useful and enduring settlement.—(Signed) J. V. Austin." On the 5th inst. a full meeting of the members of the Masters' Association was held at the Guildhall, Small-street, under the presidency of Mr. A. Krauss. The statement of his Honour, was formally submitted, and a reply of the Bricklayers' Society, in which they declined to accept the terms of the mediation, was also submitted. It was reported that a letter had been addressed to the General Secretary of the Executive Council of the Bricklayers' Society in London, making certain inquiries as to the attitude of the local branch, and a telegram was read intimating that a member of the executive, Mr. Jeffery, would be in Bristol that day for the purpose of investigating the points of difference. That gentleman, in conjunction with the local secretary, had an interview with the officials of the master builders, the outcome of which was that Mr. Jeffery made a suggestion that he would, subject to the approval of the Master Builders' Association, submit a proposal to the Bricklayers' Society to the effect that the members conform to the recommendations as laid down by Judge Austin. This proposal having been submitted to the general body of master builders, it was resolved as follows:—"That if the bricklayers will, on reconsideration, accept the recommendations of Judge Austin, the Master Builders' Association feel disposed to adopt his suggestion as to when the increased wages shall commence, provided the rules are signed forthwith." This resolution was then handed to the representatives of the Bricklayers' Society, and they promised that the same should be brought under the notice of their Society. Accordingly a meeting of the Bricklayers' Society was held, and by a substantial majority it was resolved that the bricklayers would resume work on condition that the increased wages came into force on Monday morning.

The Building Trade Dispute at Bolton.—As a result of negotiations the dispute in the plastering trade at Bolton is at an end. On June 18 the men struck work for an advance from 9d. to 10d. per hour, and a reduction of working hours from fifty-two to forty-nine and a half. The question was then referred to the Lancashire and Cheshire Building Trades Federation. Conferences have been held, and the result of the last conference just held is that amended rules have been signed, and the men have returned to work. A concession is made in the hours in favour of the men, who are also granted the advance of 1d. per hour, making the rate 10d. The men, on the other hand, concede one apprentice to each four men as against a maximum of two, whatever the number of men employed. The rules stand until the first Saturday in July next year.

LEGAL.

INJURY TO BUILDINGS THROUGH EXCAVATIONS.—IMPORTANT JUDGMENT.

Mr. Justice North, in the Chancery Division on the 4th inst., delivered judgment in the case of Jordeson *v.* The Sutton, Southcoates & Drypool Gas Company, which was tried before his lordship in February, and reported in the *Builder* of February 19 last. His lordship then decided some issues of fact, and reserved his decision upon some points of law relating to the liability of a corporation in respect of acts done by them in the exercise of their statutory powers. The facts were shortly these:—The plaintiff is the owner of twenty-four cottages in Hull adjoining the gas company's premises, and in July, 1896, the company by their contractors, Messrs. Holmes & King (also defendants), began to excavate for the purpose of constructing a sunk gasholder tank, in which to receive and seal with water a very large telescopic gasholder, intended to rise, when fully inflated, to over 100 ft. above the ground level. The circular trench which the contractors made to build the enclosing well of the tank was only a few feet from the back wall of the nearest cottage. The trench was carried down to a depth of about 37 ft., and the work had to be carried through a variety of strata, including one called "running silt," and was particularly difficult to deal with. This stratum was about 6 ft. 6 in. thick, and was immediately followed by a thinnish layer of soft clay, below that being a firm basis of impermeable gault clay. The plaintiff alleged that cracks on his land and in his cottages had occurred in consequence of subsidence caused by the withdrawal of water and sand in suspension from the running silt bed, and he further alleged that the contractors had not adopted the best-known methods of damming back the water and silt during the operation of constructing the tank; in other words, that there had been negligence. The company contended that they had a Common Law right to remove water, even if in doing so they abstracted matter in solution, and that any damage caused to their neighbour's property thereby was not actionable. They also contended, as a matter of fact, that the subsidence which took place was due entirely to the abstraction of water alone, and no appreciable subsoil had been abstracted. They also further contended that they had statutory powers to act as they had done, and that, apart from the question of negligence in doing the work, they were entitled to interfere, and proposed to interfere, with the rights which the plaintiff would otherwise have had. Mr. Justice North on the issues of fact on February 15 held that the gasholder, when erected and inflated to the proposed height of over 100 ft., must interfere with the access of light to the cottages in question, although he could not say that the method of doing the work was improper. He also held that the plan adopted had been skilfully carried into execution, and that the subsidence was due not merely to the abstraction of underground water, but also to the abstrac-

tion of silt held in suspension in the water abstracted. The question he had now to determine was whether the defendants had any legal justification for what they had done and were doing. With regard to the proposition that the construction of the trench and the erection of the gasholder were acts for which the company had statutory powers, and that those powers could not be released, his lordship held that notwithstanding the company's Acts did authorise the erection of a gasholder at this place, there was no obligation on the company to place it upon this exact site, or to make it of such a height or size as they had chosen to do. To make out their case the company must show that they could not, without interference with the plaintiff's rights, do something which they were bound to do. In that they had wholly failed. If the gasholder had been somewhat smaller, or somewhat further from the plaintiff's land there was no reason for supposing that it would have interfered with his right to light or to support. And beyond all this it was a mistake to say that an absolute power to do such things as were complained of could be found in the Acts, as such rights or powers as were conferred upon the defendant company, so far from being absolute, as was asserted by counsel, were very strictly limited and guarded. His lordship accordingly granted an injunction, but it was not to prevent the company from raising their gasholder on its north side to the height of 68 ft. from the surface of the ground. As to the interference with the support of the plaintiff's land, no injunction was now required, for there had been no further subsidence. His lordship also held that the plaintiff was entitled to damages for the injury which had been done, and which he assessed at 340*l.* This, however, did not include any damage for interference with light, nor any sum in respect of damages which might arise hereafter in consequence of any future subsidence which would give a new and separate cause of action. The injunction would issue against the company, and the damages would be awarded against all the defendants. There would be judgment against the company for the plaintiff's cost of the action, and against the other defendants for so much of the plaintiff's costs as related to interference with support and its consequences.

IMPORTANT POINT UNDER THE PUBLIC HEALTH (BUILDINGS IN STREETS) ACT, 1888.

JUSTICES MATHEW AND KENNEDY, sitting as a Divisional Court of Queen's Bench on the 10th inst., had before them the case of the Grand Junction Waterworks *v.* the Hampton District Council on a special case stated by Justices of Middlesex on a summons against the appellants, the Grand Junction Waterworks Company, for committing an offence under the Public Health (Buildings in Streets) Act, 1888, by unlawfully, without the written consent of the respondents, erecting part of a building in Upper Sunbury-road beyond the front main wall of the building on either side thereof. The question for decision was whether the appellants were justified by their local Act in filling up the whole of a certain plot of ground with buildings or whether the later general Act of 1888 had been made applicable by Clause 93 of the local Act, and, therefore, prevailed over the other provisions of their local Act. The appellants, by their Act of 1852, were empowered to make and maintain works in the lines and situation delineated in the plans and sections deposited with the Clerk of the Peace for Middlesex, and by Section 25 it is provided that the works should be completed within five years, with a proviso that nothing in the Act contained should restrain the company from extending their works whenever it should be necessary for the purpose of supplying water within the limits of their district. The company, in 1853, compulsorily acquired some land in the parish of Hampton, situated at the junction of a road leading from Sunbury to Hampton with the road leading from Staines to Hampton, the road being within the limits of the deviation marked on the plans. Upon this the appellants constructed works for supplying water. Since 1858 the west wing, consisting of engine-house and boiler-house, had been erected as an extension. In October, 1897, the appellants, wishing to extend their works, proposed to construct an additional engine-house in connexion with their then existing boiler-house and submitted plans to the respondents, who decided not to allow the new engine-house to be brought forward beyond the front main wall of the building on either side, and they accordingly disapproved the said plans. In October, 1897, the appellants commenced to excavate upon the lands upon the only site which was available without taking down an existing building, and to construct an engine-house. On March 7 last, the engine-house being then above the ground, the respondents gave the appellants notice under the Act of 1888, to discontinue the offence against the provisions of the Act. The appellants contended that they were authorised by their special Acts to construct upon the land such works as were necessary for the purposes of their undertakings, and that they were, therefore, not prohibited by the general provision contained in the Public Health (Buildings in Streets) Act of 1888 from erecting the engine-house, which was necessary. The magistrates, however, convicted the appellants, but were of opinion that the engine-house was, "without reference to its position, necessary for the purposes of their undertaking."

At the conclusion of the arguments of counsel their lordships affirmed the conviction and dismissed the appeal, Mr. Justice Mathew stating that he saw no grounds for departing from the plain language of the section of the Public Health Act, 1888, which appeared to have been infringed.

The appeal was dismissed accordingly.

Mr. Bosanquet, Q.C., Mr. Macmorran, Q.C., and Mr. R. Cunningham Glen appeared for the appellants; and the Right Hon. H. H. Asquith, Q.C., and Mr. Courthorpe Munroe for the respondents.

MEETINGS.

MONDAY, AUGUST 15.

Institute of Sanitary Engineers.—Council Meeting at 5.0 p.m., at the Offices of the Institute, 63 and 64, Chancery-lane. Special General Meeting at 7.0 p.m., in the Arbitration Room, 63 and 64, Chancery-lane.

WEDNESDAY, AUGUST 17.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the Members. 8 p.m.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

***Open to opposition until** September 20.*

[1897.] 16,889.—INDICATING THE MOVEMENT, OR CESSATION OF MOVEMENT, OF A FLUID: *O. & J. M. Carpenter.*—The invention lies in the employment of a magnetic body heavier than the fluid and a magnet so arranged that the body may come within and leave the field of the magnet to cause a disturbance thereof. The device may be used also as a low-water alarm for boilers, and the magnet may be used to release a clockwork for actuating an alarm.

16,931.—CONTINUOUS PRODUCTION OF COMPOUND METAL SHEETS, PIPES, &C.: *J. J. Atkinson.*—The process consists in leading tinned or suitably prepared woven or interlaced wire through a pot containing molten lead or other fusible metal or alloy and drawing it through a slot and between dies or moulds provided with water-jackets; for pipes the dies are fashioned of suitable shape and rollers and guides are arranged for moulding.

17,482.—ACETYLENE GAS GENERATORS: *N. Reggiani & A. Chrisini.*—The novelty consists in arrangements whereby (1) the water enters directly and automatically into the generators through the action of a cone or other floating body, or by means of a spiral spring fitted to the axis of the bell's pulley; (2) the water in its course consumes all the carbide of calcium from the bottom upwards by means of perforated diaphragms; (3) the closure of the generators with lids is such as to render the apparatus inodourless; and (4) the eduction pipes serve as safety valves in the case of an excessive production of gas.

18,337.—ELECTRICAL CUT-OUTS: *H. Hirst.*—To isolate the point of fusion on an excess of current is employed a base of china or other suitable material on which is formed a hollow boss screwed into a similar domed cover; the terminals are fixed upon opposite sides of the boss, and the fuse passes through its cavity; ribs or webs projecting radially from the boss intervene between the terminals externally; ventilating orifices in the domed cover will enable the escape of vapour resulting from fusion within the cavity whilst any metallic globules in a state of fusion are retained.

18,989.—PRODUCTION OF CALCIUM CARBIDE: *H. Maxim & W. H. Graham.*—A number of electric currents enter the furnace through separated electrodes, and thence to one common electrode; heat is produced by means of either an electric arc or a core placed between each of the separate electrodes and the common electrode, and raised to a great heat by its resistance to the current; the electrodes are also electrically connected, so that the current enters the furnace through one or more of the separate electrodes to the common electrode and back through the remaining separate electrodes. For the last-named contrivance are claimed several advantages: *e.g.*, it requires half the quantity of leads used in any other system; dispenses with all outside connexion with the common electrode, and allows the same to be made much smaller; permits the current through any electrode to be broken without causing any appreciable alteration in the current through the others, and admits the use of a higher and more economical furnace.

19,015.—SASH FASTENERS: *W. E. Ison.*—This fastener has a bed-plate in two portions, whereof one has a stop or pin with an enlarged head, and the other has pivotted on to it a flat plate, containing a cam slot so arranged that on turning the plate and bringing part of it over the other portion of the bed-plate, the pin enters the slot.

20,809.—WATER TAPS: *J. Macnaughton.*—The invention is intended to provide a tap whose spigot or turn cock is locked in the closed position by the water pressure, and wherein the recoil from sudden closing is prevented or minimised; the water channel in the stem and barrel is cut eccentrically, or nearer one side than the other; in the spigot's ground face a recess is cut in such a position that when the spigot is turned to shut off the flow, it comes opposite the channel in the barrel on the pressure side; one face of the recess has a greater area than that of the other, and the water pressure tends to turn the spigot in the direction for shutting off the water; on opening the tap the cavity retires full of water that is discharged through a weep-hole in one side of the barrel whilst the tap is running; it is empty and ready to act as a recoil chamber when the tap is closed.

21,146.—VITREOUS DECORATION OF WALLS, PANELS, AND OTHER SURFACES: *W. J. Pearce (of Walter J. Pearce, Limited).*—The design is cut from plain or coloured transparent or translucent glass having an uneven surface, the parts are stained, the even or smoother side of the glass is coated with metallic foil, and cemented upon a foundation in such a manner that the metallic surface is at the back of the decoration. For leaf metal aluminium is preferably employed; the cement is composed of boiled oil, burgundy pitch, rosin, red lead, manganese dioxide (black), and whiting or chalk.

21,185.—GULLEY OR STENCH-TRAP: *J. Johnson.*—As an improvement upon his gulley-trap under Patent 10,023, 1896, the inventor either carries the central seal-water chamber by the cover-plate or uses, in its stead, a U-shaped casing attached to the cover-plate's central pipe, which hoods over the end thereof and forms a trap with the pipe, the outlet being uppermost and the construction being similar to a duplicated syphon-trap.

21,426.—LAYING DRAIN-PIPES: *T. T. Haylock.*—To facilitate the mending of defective joints, holes or spaces are formed in the concrete bed at every joint of the pipes when the bed is being laid by inserting moulds which may be either in the form of baskets, and perforated, to become part of the concrete mass, or in the shape of blocks to be removed before the concrete becomes set.

[1898] 4,543.—ARTIFICIAL STONE: *C. Schoenfelder.*—The admixture is formed of silica, kaolin powder, sulphate of lime, glass, and fluorite, in varying proportions; for burning, a special furnace is contrived, wherein the gases pass through passages in the walls, and playing round the burning chamber, are mixed in another chamber with air and oxygen before they enter the burning chamber, so that a clear flame rich in oxygen passes through the latter when the furnace is burnt with an open fire.

9,834.—LOCKS AND LATCHES: *G. H. & A. M. Innes.*—A circular disc, having its outer edge bevelled in one direction all round, is fitted within a lock case, so that it stands on its edge upon an inclined plane, and therefore continually tends to roll forward to its lowest position; the disc has a hole in its centre, by means whereof it may be rolled back to its highest position within the case by inserting the finger. When the disc is in its lowest position a part of it projects to engage with the doorpost; it can then be locked by a lever to be moved by a key.

13,446-7.—EXPANSIBLE DRAIN PLUGS OR STOPPERS, AND APPLIANCES FOR USE THEREWITH: *R. G. L. Burn.*—To facilitate the plugging of drains is devised an expansible plug which has a spindle extending above the plug's axis; the stopper is composed of two plates (between which is an india-rubber ring), a screwed tube or spindle in combination with a nut on the spindle's screwed end, bevel gear teeth on the nut, a toothed pinion gearing with the nut wheel, and a spindle to carry the toothed pinion. For applying stoppers, such as are composed of inflatable bags, to drains delivering into traps of the "Buchan" type, is contrived a metal rod having a clip at its lower end for attachment to the bag, and having its upper end screwed for the attachment of an ordinary malacca drain rod; on the metal rod are projecting guides to receive an operating rod capable of motion parallel thereto; the operating rod is screwed at its upper end for malacca drain rods, whilst its lower end is bent somewhat and pivotted to a connecting link, which is pivotted to a lever arm, which is jointed at one end to the metal rod.

NEW APPLICATIONS.

July 25—30.

16,135, Niblett & Sutherland, Electrical Heating Apparatus. 16,139, J. Thompson, Pounding, Crushing, and Purifying Clay and similar materials. 16,161, Kershaws, Circular-Saw Fence. 16,167, Lingard & Peace, Union Joint. 16,171, J. E. Hill, and 16,283, W. & E. T. Fitch Co., Window-sash Fasteners. 16,173, La S. A. des Ciments et Plâtres de Vilvorde, Belgium, Portland Cement. 16,178, A. Gray, Removal of Scale from Brazed Articles. 16,184, Schneider & Smidth, Kilns for Burning Portland Cement, &c. 16,187, W. Gurtler, Expanded Metal for Constructional Purposes. 16,207, T. J. Dickinson, Key Guards or Holders for Locks and Latches. 16,209, R. Allan, Automatic Window Lock. 16,215, J. Twigger, Steelyard. 16,217, Spences, Treatment of Sewage. 16,225, J. Boardall, Weather-bar for French Windows. 16,229, C. D. Richards, Locks and Latches. 16,234, R. J. Moss, 16,366, Bilbie & Drivet, 16,457, H. R Berger, 16,479, Williams & Clarke, 16,487, J. S. Legge, and 16,559, R. Williams, Generation of Acetylene. 16,238, G. M. Marchant, Expandible Plugs for Straight-way Valves. 16,241, J. Wagner, Self-closing Door Hinge. 16,242, A. P. Prichard, Burglar-proof Safes and Screens. 16,257, J. R. Garner, Starting Switches and Regulators for Electric Motors. 16,261, B. A. Mordaunt, Sliding-Window Sash Fastener. 16,270, G. Chapman, Joiners' Cramps. 16,271, R. Eberlein, Calculating Apparatus. 16,278, R. L. Morgan, Screw Taps and other Tools and Tool-holders. 16,284, W. H. Coe, for applying Metallic Leaf for Decorative Purposes. 16,286, B. C. Batcheller, Pipe-boring Machines. 16,288, E. D. Woods, Polishing Wheels. 16,295, W. P. Rix, Moulding Pottery. 16,299, M. Kohl, Alternating Current Transformer. 16,311, W. Lindemann, Smith's Hearths or Forges. 16,317, Moore & Karr, Acetylene Gas Lamps. 16,321, Sir John Benjamin Stone, Knt., Apparatus for Excavating, Mining, Quarrying, &c. 16,324, L. L. Morane, Shrinking Hoops around Pipes, &c. 16,334, M. Cramby, Pattern Cutters. 16,335, R. C. Staley, Kilns for Earthenware Fireclay Goods, &c. 16,341, W. Tharme, Treating Clay for Making Bricks, Tiles, &c. 16,345, G. H. Taylor, Bradawls, &c. 16,348, S. M. Rutnagur, Water-waste Preventers. 16,352, Macfadyen & Ferguson, Incandescent Electric Lamps. 16,358, Leggots, for Regulating Sky-lights. 16,359, E. Walker, Cold-lined Lead or Composite Pipe Connexions. 16,378, E. Wulff, Reversible Stage for Theatres, Circuses, &c. 16,385, H. A. Olsson, Electrical Fire-alarms. 16,387, P. Kirsten, for Indicating Deficiency or Stoppage in the Flow of Liquid Through Pipes. 16,401, W. P. Preble, Turning or Shaping Wood and other Materials. 16,410, I. Coombes, a Lock. 16,416, H. Alexander, Brick-making and Pressing Machines. 16,417, H. Burridge, Kilns or Ovens for Firing Bricks, &c. 16,421, W. Muirhead, Manhole, Sludge, Mudhole, and Similar Doors. 16,423, H. F. Atkins, Ellipsographs. 16,433, N. N. Haigh, Wood Moulding and Planing Machines. 16,439, E. Codling, Bath-room Lavatories. 16,444, L. Renters, Water Wheels. 16,454, H. Boddy, Slating Roofs. 16,458, T. P. Levey, Hanging and Fixing Roller Blinds. 16,470, A. McLean, Tar Pavements. 16,476, T. R. Ablett, Drawing Boards. 16,486, G. F. Belling, Steel Cutter for Lead or other Soft Metals, Linoleum, &c. 16,489, W. Olschewsky, Artificial Stone. 16,498, G. Cawwood, Combined Stove and Steam Generator or Vapouriser. 16,515, C. W. Carter, Lathe Chucks. 16,522, R. H. Cunningham, and 16,552-3, H. Bremer, Arc Lamps. 16,524, R. M. Gloyne, Street or Road Gully with Double Water Seal. 16,527, Kites, Inlet Ventilator. 16,550, A. J. A. Berthelier, Furnaces for Baking Enamels, Glassware, and Porcelain. 16,562, F. Trier, Dressing, Moulding, and Turning Stone, &c., with Circular Rolling Cutters. 16,569, O. Beck, Door Holders. 16,598, O. Hoffmann, Purifying and Humidifying the Atmosphere in Buildings. 16,604, C. H. Palethorpe, Roofing Slates. 16,611, G. T. Epstein, Fireplaces or Stoves. 16,614, G. B. Willbond, Waste Water Closet. 16,628, J. Gibbs, "Wood Fillers." 16,640, M. B. Church, Modelling, Decorating, and otherwise Working in Plastic Material. 16,651, H. C. Osborn, Safety Hook Clamps fo

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Shops and Dwelling Houses	Plymouth Town Council	Premium, 250*l.*	Sept. 24
*Municipal Buildings, Fire Station, Police Offices, &c.	Reigate Corp.	Three Prem ums (amounts not stated)	Oct. 6

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Buildings at Electric Light Station	Pembroke Commrs.	R. Hammond, C.E. 64, Victoria-st. S.W.	Aug. 16
Street Improvements	Urmston (Lancs.) U.D.C.	C. C. Hooley, C.E. Council Offices	do.
Additions to Police Office, Swinton	Standing Joint Comtee.	H. Littler, Archt, County Offices, Preston	do.
Iron and Steel Work, Baths	Wolverhampton Corp.	J. W. Bradley, C.E. Town Hall	do.
Wall, &c. at Abbey	Romsey Corp.	M. L. Hale, Abbey Water Romsey, Hants	do.
Additions to School, Upper Cwmbran, Mon.	Llanvrechva Upper Sch. Bd.	Lansdowne & Griggs, Archt Newport, Mon.	do.
Flogging, Kerbing, &c.	Soyland (Yorks.) U.D.C	J. Wadsworth, Surv. Council Offices	do.
*Reflooring Playroom at Schools, Brentwood	Hackney Union	F. R. Coles, Clerk's Offices, Homerton, N.E.	Aug. 17
Additions to Workhouse	Bolrothery Union	A. Scott & Son, Archt. 16, William-st Dregheda	do.
Lecture Hall, &c. Baptist Church, Cambray, Glos.	Committee	Knight & Chatters, 110, High-st. Cheltenham	do.
School, &c near Rotherham	Catcliffe Sch. Bd	J. Platts Archt Rotherham	do.
Sewage Treatment Works	Shipley (Yorks.) U D.C.	M. Paterson, C.E. 35, Manor-row, Bradford	do.
Additions to Workhouse, &c.	Cheltenham Union	R. Tichhurst, Essex-place, Cheltenham	do.
Additions to Chapel, Wyndham-row, Cockermouth	Rev. C. Humble	W. G Scott & Co. Archt. Workington	do.
Sewering, Kerbing, &c. Osborne-road	Birkenhead Corp.	C. Brownridge, C.E. Town Hall	do.
*New Laundry and Structural Alterations at Workhouse	Shipston - on - Stour Union	The Master at Workhouse	Aug. 18
Filter Bed, &c. Little Hallam	Ilkeston Corp.	H. J. Kilford, Boro. Surv. Town Hall	do.
Additions to Large Greenhouse, Public Park	Darlington Corp.	Borough Surv. Town Hall	do.
Additions to Hotel, Chard-road, Chard, Somt.	Mitchell, Toms, & Co.	F. J. Symes, Archt. Chard	do.
Concrete Sewer, Newport-road	Barnstaple Corp.	F. W. Chanter, Engr. Pilton-bridge, Barnstaple	do.
Alterations, &c. Erganagh Rectory, Omagh		A. M'C. Stewart, Archt. Londonderry	do.
Additions to Workhouse	Easingwold Union	F. J. H. Robinson, Union Offices, Easingwold	Aug 19
Seven Public Conveniences	Manchester Corp.	City Surv. Town Hall	do.
Additions, &c. to Warehouse, Bury-st. Stowmarket	G. Thurlow & Sons	H. G. Bishop, Archt. Stowmarket	Aug 20
Schools, near Aberbeeg	Llanhuileth Sch. Bd.	Swash & Bain, Archts. Newport, Mon.	do.
Farmhouse, Harberton, near Totnes, Devon		Bourne & Son, Totnes	do.
Additions to Peter Symonds' School, Winchester	Governors	Cancellor & Hill, Archt. 12, Jewry-st. Winchester	do.
Church, St. Anne's-on-Sea		Austin & Paley, Archt. Lancaster	do.
Alterations to Chapel, Colliery, Wheatley Hill, Durham		W. Fenwick, Wheatley Hill, co. Durham	do.
Street Works, New Bilton	Rugby R.D.C.	T. W. Willard, Surv. Council Offices	do.
Cottage Hospital, &c. South-street, Leominster	Trustees	J. B. Dowding, 5, Corn-square, Leominster	do.
Schools, Rosemary-lane	Mansfield Sch. Bd.	Vallance & Westwick, Archt. White Hart-chambers, Mansfield	do.
National School, Bunmona, nr. Cork, Ireland	Rev. W. Coghlan	J. O'Regan, Bunmona, Charleville	do.
Street Improvements	Whitley & Monkseaton U.D.C.	J. P. Spencer, C.E. Council Offices, Whitley	Aug. 22
Houses, Forth-street, Grangemouth	Co.-op. Building Soc	G. D. Page, Archt. Old Glebe-chambers, Falkirk	do.
Steel Rails (2,000 tons)	Glasgow Corp.	J. Young, 88, Benfield-st. Glasgow	do.
Sewers, &c.	Wilmslow U.D.C.	J. Bowden, C.E 14, Ridgefield, Manchester	do.
Granite, &c. (500 tons)	Stevenage U.D.C.	W. O. Times, Council Offices	do.
Flagging, &c. Sefton-road	Litherland (Lancs.) U.D.C.	W. B. Garton, Surv. 25, Sefton-road, Litherland	do.
*Sewage Farm Extension Works	Oxford Corp.	W. H. White, Town Hall, Oxford	do.
*Cottage and Farm Buildings	do.	do.	do.
*Filter, Tank, and Outfall, and Repairs and Alterations	Rochford R.D.C.	A. Gresson, Alexandra-st. Southend	do.
*Repairs to Haldon Breakwater	Torquay T.C.	H. A. Garrett, Town Hall	Aug. 23
Homes, additions to Workhouse, &c	Blackburn Union	Stones & Gradwell, Archt Richmond-ter. Blackburn	do.
Widening High-street	Carshalton U.D.C.	W. W. Gale, C.E. Council's Offices	do.
Granite Road Metal	do.	do.	do.
Sewerage Works	Rotherham Corp.	R. E. W. Berrington, C.E. Bank-buildings, Wolverhampton	do.
Wood Paving (3,750 yards)	Goole U.D.C.	Surveyor, Council's Offices	do.
Private Street Works	Turton (Lancs.) U.D.C.	V. W Laithwaite, Surv. Public Offices, Bromley Cross, nr. Bolton	Aug. 24

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Portland Cement	Halifax Corp.	E. K. S. Escott, C.E. Town Hall	Aug 22
Sewerage Works, Moorville	Carlisle R.D.C.	Surveyor, Council Offices	do.
*Pipe Sewer	Shoreditch Vestry	J. R. Dixon, Town Hall, Old-street, E.C.	do.
Iron and Steel Buildings, Robin Bank-road	Darwen (Lancs.) Corp.	Borough Engineer, Town Hall, Darwen	Aug. 25
Byres, Stables, &c. Auchmillan, Aberdeen		J. Craigen, 193, Union-st. Aberdeen	do.
Two Blocks Houses, Princeton-road Bangor, Ireland	S. Crosbie	Young & Mackenzie, Archt. Dougall-square East, Belfast	do.
Iron, &c. Refuse Destructor	Darwen (Lancs.) Corp.	Borough Engineer, Town Hall	do.
Brick Culverts	Morley Corp.	W. E. Putman, C.E. Town Hall	Aug. 26
Steel Girder Bridge (Contract No. 2)	do.	do.	do.
Cast-iron Pipes (Contract No. 3)	do.	do.	do.
*Postmen's Office, Mortlake	Commrs. H.M. Works	Offices, Storeys-gate, S.W.	do.
Asphalte (3,000 yards)	Cleator Moor (Durham) U.D.C.	R. Robertson, Surv. Cleator Moor	Aug. 28
Buildings at Destructor Works, Attercliffe	Sheffield Corp.	C. F. Wike, C.E. Town Hall	Aug. 29
*Sewers	Barnet U.D.C.	W. R. Mansbridge, 40, High-street, Barnet	Aug. 30
*Sorting Office, Lee, S.E.	Commrs. H.M. Works	Offices, Storeys-gate, S.W.	do.
*Superstructure of Parcel Depot	do.	do.	Aug. 31
Institute Buildings, Consett, Durham		Plummer & Burrell, Archt. 13, Grey-street, Newcastle-on Tyne	do.
Additions to Infirmary	Birmingham Union	W. H. Ward, Archt. Paradise-st. Birmingham	do.
*Asylum Building (Retreat), Scalebor Park, Burley-in-Wharfedale	West Riding Asylums Committee	J. V. Edwards, County Surv. Wakefield	Sept 1
*Surface Water Drains	Cirencester U.D.C.	T. Hibbert, Council Offices, Cirencester	do.
*Museum	Cty. Boro. of West Ham	Gibbon & Russell, 11, Gray's Inn-square, W.C.	Sept. 2
Making-up Mousehold-street, and others	Norwich Corp.	A. E. Collins, C.E. Guildhall, Norwich	Sept. 3
*Technical Institute and Free Library	Tonbridge U.D.C.	A. H. Neve, jun. 83, High-st. Tonbridge	do.
*Covered Reservoir	Derby Corp.	Boro. Surv. Balcington-lane, Derby	Sept. 5
Lock, &c. South Dock	Swansea Harbour Trustees	A. O. Schenk, Engr. Harbour Offices	Sept. 8
*Aqueduct (17¼ miles)	Birmingham Corp.	J. Massergh, 5, Victoria-street, S.W.	Sept. 13
Schools, Manselton	Swansea (U.D.) Sch. Bd.	C. E. T. Laurence, 181, Queen Victoria-st. E.C.	Sept 19
*New Laundry at Workhouse	St. George's (Hanover-square) Union	E. T. Hall, 57, Moorgate-street, E.C.	Oct. 12
*Public Buildings	Maldons and Coombe U.D.C.	T. V. H. Davison, New Malden, Surrey	No date
*Schools and Hall, Swindon	Holy Rood School Managers	Silcock & Reay, Octagon-chambrs. Milsom-street, Bath	do.
Gymnasium at Durham School		Hicks & Charlewood, Archt. Grainger-st. Newcastle-on-Tyne	do.
Farm Buildings, Fearby, near Masham		R. Imeson, Sutton Grane, Masham, Darlington	do.
Additions to Technical Institute, New Brompton	Gillingham (Kent) U.D.C.	F. Smith, Archt. High-st. New Brompton	do.
Schools of St. Augustine, Harehills-road, Leeds	Rev. Canon Collingwood	W. C Hall, Archt. Park-row, Leeds	do.
Three Houses, Yarborough-road, Lincoln		W. Mortimer & Son, Archt. Lincoln	do.
Manse, Crossan, Ireland	Presbyterian Congregation	A. Boyd & Co. Castlebridge Lisburn	do.
Offices and House, Thornaby-on-Tees	J. Hopper & Co. Ltd.	J. M Bottomley, Archt. 96, Albert-rd. Middlesbro.	do.
Wesleyan Chapel, Hindley, near Wigan		W. Waddington & Son, Archt 17, St. Ann's-sq. Manchester	do.
Additions to Owens College, Manchester		A. Waterhouse & Son, Archt. 20, New Cavendish-st. W	do.
Villa, Whittlesea	A. Thory	J. G. Stallebrass, Archt North-st. Peterborough	do.
Additions to Hospital	Epping R.D.C.	E. Egan, Archt. Holmdale, Loughton	do.
Four Houses, near Scarborough		Ball, Cooper, & Davis, Archts. Scarborough	do.
Hotel, Aberfeldy, N.B.		Dun Cameron, Archt. Inverness	do.
Shop Premises, Main-street, Grange-over-Sands	S. Broadbent	J. Hutton, Archt. Kendal	do.
Additions to Factory, Park-lane, Kidderminster	Carpet Manufacturing Co.	J. M. Gething, Archt. Oxford-chmbrs. Kidderminster	do.
Two Villas, Roundhay, Leeds	W & A. M. Greaves	A. E. Kirk, Archt. 13, Broad-st Leeds	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Architectural Assistant	Beckenham U.D.C.	3*l.* 3s. per week	Aug. 15
*Quantity Surveyor (Temporarily)	Aylesbury U.D.C.		do.
*General Foreman	Walthamstow U.D.C.	*l.* 10s. per week	do.
*Clerk of Works	London Asylums Com.	5*l.* 5s. per week	Aug. 22
*Architectural Assistant	Halifax Corp.	3*l.* 3s. per week	Aug. 24
*Clerk of Works	Bethnal Green Vestry	4*l.* 4s. per week	Aug. 27

Those marked with an asterisk (*) are advertised in this Number. ***Competitions*, p. iv.** ***Contracts*, pp. iv. vi. & viii.** ***Public Appointments*, pp. xviii., xix. & xxi.**

Ladders, &c. 16,652, Georgina S. Browne, Decorative Coverings for Floors, Walls, &c. 16,669, The Berliner Kunstdruck and Verlagsanstalt vormals A. & C. Kaufmann, Bricks and Tiles.

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

July 27.—By ORGILL, MARKS, & ORGILL (at Masons' Hall Tavern).

Kilburn.—Canterbury-rd., "The Brondesbury Arms" p.-h., u.t. 38½ yrs., g.r. 15*l.*, r. 105*l.* .. £2,910

Charing Cross.—St. Martin's-lane, "The Marquis of Lorne" p.-h., f., r. 107*l.* os. 5d. 4,350

Camberwell.—5 and 7, Avenue-rd.; also "The Lord Clyde" p.-h., and 1, Crown-ct., f., r. 137*l.* 4,500

By BELTON & SONS (at Masons' Hall Tavern).

City-rd.—123, Britannia-st., and "The Queen's Head" p.-h., u.t. 57½ yrs., r. 240*l.*, with goodwill 13,250

By NEWLAND, DAVIS, & HUNT (at Newport).

Undy, &c., Mon.—Various enclosures, 43 a. 3 r. 29 p., f. 1,855

Two copyhold enclosures, 9 a. 3 r. 30 p. £445

A freehold cottage and 29 p. 118

By HENRY DUKE & SON (at Bridport).

Bridport (near) Dorset.—The Wooth Grange Estate, 218 a. 0 r. 14 p., f. 10,100

By HOOKER & WEBB (at Redhill).

Horley, Surrey.—Enclosures of land, 10 a. 2 r. 22 p., f. 750

Christmas Farm (part of), 13 a. 1 r. 26 p., f. 1,600

By WOODHAMS & SON (at Hailsham).

Pevensey, Sussex.—Enclosure of marsh land, 4 a. 2 r. 34 p., f. 215

Wartling, Sussex.—Enclosures of marsh land, 14 a. 1 r. 3p., f. 510

Convent House holding, 7 a. 3 r. 16 p., f. 490

Brook Farm, 31 a. 0 r. 39 p., f. 960

Hurstmonceux, Sussex.—Allotment fields, 13 a. 0 r. 9 p., f. 360

Two cottages, shop, and 8 a. 1 r. 18 p., f. 800

New Barn Farm, 45 a., f. 1,030

Stunts Green Farm. 100 a. 0 r. 16 p., f. 1,100

Chilsham Farm, 100 a. 1 r. 25 p., f. 910

A freehold farm, 32 a. 0 r. 33 p., f. 360

Fareham Farm, 52 a. 2 r. 3 p., f. 510

Causeway Farm, 39 a. 1 r. 32 p., f. 470

Chilthurst Farm, 55 a. 1 r. 27 p., f. 750

July 28.—By CHINNOCK, GALSWORTHY, & Co. (at Manchester).

Lostock Gralam, Cheshire.—A freehold farm, 16 a. 2 r. 18 p. £1,300

Enclosure of land, 4 a. 0 r. 38 p., f. 180

19, Station-rd. and 5 a. 1 r 32 p., f. 450

1, 3, 5, 7, and 9, Lostock-green, f. 410

Moss Side Farm, 15 a. 2 r. 27 p., f. 1,000

Moss Farm and Brook House Farm, 251 a. 0 r. 37 p., f. 11,500

Holford Hall Estate, 159 a. 2 r. 23 p., f. (including Manor of Holford) 8,000

Graham Farm, 49 a. 2 r. 36 p., f. 2,250

By N. W. ROBINSON (at Hemel Hempstead).

Hemel Hempstead, Herts.—A freehold brickfield, 13 a. 3 r. 30 p. 320

A freehold house and 4 a. 2 r. 9 p. 520

21 freehold cottages 862

A freehold house (with off-licence) and ½ an acre 510

***Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent yd. for yard, &c.**

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	9/5/0 14/5/0
Sequoia, U.S.ft.cu.		1/9/0 2/2/0
Asa, Canada, load		3/18/0 5/3/0
Birch, do.		3/7/6 5/0/0
Elm, do.		4/13/0 5/13/0
Fir, Dantsic, &c..		2/9/0 4/9/0
Oak, do.		1/18/0 2/18/0
Canada		3/13/0 4/18/0
Pine, Canada red		0/0/0 0/0/0
Do. yellow		4/3/0 6/3/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg..		5/0/0 6/10/0
Wainscot, Riga, &c., log		4/10/0 6/0/0
Odessa, crown		4/10/0 6/0/0
Deals, Finland 2nd & 1st std 100		9/0/0 9/10/0
Do. 4th & 3rd		9/0/0 9/10/0
Do. Riga		7/10/0 8/10/0
St. Petersburg, 1st yellow		11/0/0 13/10/0
Do. 2nd yellow.		10/0/0 11/10/0
Do. white		9/0/0 11/0/0
Swedish		9/10/0 16/0/0
White Sea		10/10/0 17/0/0
Canada, Pine 1st		18/0/0 24/10/0
Do. do. 2nd		13/0/0 15/15/0
Do. do. 3rd, &c.		6/0/0 9/10/0
Do. Spruce, 1st		8/10/0 10/10/0
Do. do. 3rd and 2nd		7/10/0 8/10/0
New Brunswick		7/0/0 8/0/0
Battens all kinds		5/0/0 16/0/0
Flooring boards, sq., 1 in. prep. 1st		9/6 16/0
Do. 2nd		8/0 13/0
Other qualities—		6/3 7/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba		/5½ /7
St. Domingo, cargo av.		/5 0/1/3
Mexican, do. do.		/3¾ /4
Tobasco, do. do.		/4 /6½
Honduras, do.		/4 /6
Box, Turkey, ton		4/0/0 15/0/0
Rose, Rio		7/0/0 14/0/0
Bahia		6/0 0 12/0/0
Satin, St. Doming.		0/0/5 0/1/0

TIMBER (continued).		
Satin, Porto Rico	0/0/6	0/1/6
Walnut, Italian	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland ton	2/6/7½	0/0/0
Bar, Welsh, in London	5/15/0	5/17/6
Do. do. at works in Wales	5/10/0	5/12/6
Do. Staffordshire, in London	6/5/0	7/10/0
COPPER—British cake and ingot	54/5/0	54/15/0
Best selected	54/15/0	55/5/0
Sheets, strong	59/0/0	60/0/0
Chili bars	50/17/6	0/0/0
YELLOW M. L. lb.	5d.	5¼d.
LEAD—Pig Spanish ton	13/0/0	0/0/0
English com. bands	13/5/0	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards	14/5/0	0/0/0
Pipe	14/15/0	0/0/0
ZINC—English sheet ton	23/0/0	0/0/0
Vieille Montagne	23/10/0	0/0/0
Spelter	20/2/6	21/3/9
TIN—Straits ton	73/17/6	0/0/0
Australian	74/10/0	75/0/0
English Ingots	76/5/0	77/5/0
Banca	£/0/0	0/0/0
Billiton	£/0	0/0/0
OILS.		
Linseed ton	16/15/0	0/0/0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon	22/0/0	0/0/0
Palm, Lagos	21/15/0	0/0/0
Rapeseed, English pale	27/10/0	0/0/0
Do. Brown	26/0/0	0/0/0
Cottonseed ref.	14/5/0	15/5/0
Oleine	13/10/0	14/10/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black	0/5/0	0/6/6
TAR—Stockholm barrel	1/5/0	0/0/0
Archangel	0/12/6	0/0/0
Turpentine	22/0/0	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ASHTON-IN-MAKERFIELD (Lancs.).—For the construction of water-supply works, &c., for the Urban District Council. Mr. J. W. Liversedge, waterworks engineer, Bryn-street, Ashton-in-Makerfield:—

12-in. Cast Iron Pipes, &c.

Newton Chambers	£1,490 0 0	Merton & Co., on behalf of Wood & Co.	£1,385 8 6
Stanton Iron Works	1,411 0 0		
G. & J. Staveley & Co.	1,406 3 9	Cochrane & Co., Dudley (accepted)	1,375 10 9
Thompson & Co.	1,404 17 7		

ASHTON-IN-MAKERFIELD.—For the supply of granite macadam, for the Urban District Council. Mr. J. W. Liversedge, Surveyor, Council Offices, Ashton-in-Makerfield:—

	Per ton. s. d.		Per ton. s. d.
J. J. Lee	10 10	Mountsorrel Granite Co	12 3
Threlkeld Granite Co.	10 5	Leonard Cooper	10 8
Pwllheli Granite Co.	9 3	Clee Hill Granite Co.	12 6
Ceiriog Granite Co.	9 7	Darbishires, Ltd., Penmaenmawr (accepted)	8 9
Brandritt & Co.	9 0		

BELFAST (near).—Terrace of five houses:—

Wm. Nimick	£2,729	Grainger Bros.	£2,301
Campbell & Lowry	2,595	Wm. Millar, Holywood*	2 075
		* Accepted.	

BOURNEMOUTH.—Accepted for alterations and redecoration of "Sandykeld," Manor-road, for the Rt. Hon. Lord Vernon. Mr. G. A. Bligh Livesay, architect:—

F. T. Cutler £320

BRAINTREE (Essex).—For the erection of house and two cottages, for Mr. H. Calver. Mr. J. W. Clark, architect, Coggleshall, Essex:—

Silas Parmenter	£895 0	J. Smith & Son, Witham*	£798 10
		* Accepted.	

BRISTOL.—For extensions to school, Greenbank, for the School Board. Mr. F. Bligh Bond, architect, Alliance-chambers, Corn-street, Bristol:—

Keen & Keen	£2,035	J. Hatherly	£1,937
W. J. Tanner	1,972	E. Walters	1,920
E. Clark	1,950	W. Church*	1,887

Plumbing.

J. Wilkins, Bristol* £42

[Four others tendered.]
* Accepted.

BURTON-UPON-TRENT.—Accepted for the erection of a retort house, &c., at gasworks, for the Corporation. Mr. F. L. Ramsden, Engineer, Town Hall, Burton-upon-Trent:—

Building.

J. T. Farlow, Burton-on-Trent £2 395 19 4

Wrought-iron Roof.

Gough & Felgate, Burton-on-Trent £589 13 6

CARDIFF.—For paving, kerbing, &c., Harrowby-lane, &c., for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff:—

	Harrowby-lane.	Harrowby-lane East.
J. Rich	£376 11 2	£32 4 9
T. Rees	417 9 10	37 6 0

CARDIFF.—For the erection of business premises, 31 and 32, High-street, for Mr. A. F. Langley. Mr. E. Jenkin Williams, architect, 14, High-street, Cardiff. Quantities by the architect:—

Newman & James	£3,651 15 0	W. Thomas & Co.	£2,965 0 0
Mainwaring & Davies	3,603 6 4	W. Bowers & Co.	2,963 10 0
		C. C. Dunn	2,909 0 0
J. M. Hockridge	3,370 13 0	C. Price & Son	2,899 0 0
D. Thomas & Co.	3,150 0 0	W. H. Ingleson	2,846 0 0
Knox & Wells	2,983 0 0	S. Shepton & Co.	2,842 0 0
Williams	2,969 0 0	E. Turner & Sons, Cardiff (accepted)	2,668 0 0

CARDIFF.—For alterations to house, &c., at waterworks depot, Trade-street, Penarth-road, for the Corporation. Mr. C. H. Priestley, Engineer, Town Hall, Cardiff:—

Williams & Thomas	£299 14 6	W. T. Morgan	£241 13 6
W. H. Ingleson	262 0 0	Cox & Bardo	237 1 4
E. Turner & Sons	251 6 9	C. C. Dunn	205 15 8
G. Griffiths	248 9 8	Blacker Bros., Llanfair-road, Cardiff*	193 12 6
G. Hallett	244 2 6		
		* Accepted.	

CARDONALD (N.B.)—Accepted for extensions to school, for the Paisley Landward School Board. Messrs. Kerr & Watson, architects, Johnstone. Quantities by Mr. J. H. Bradshaw, Glasgow:—

Building.—J. J. Wardrop, Lochwinnoch	£1,158
Joinery.—Adam Kirk, Whiteinch	601
Plumbing.—C. Murdoch & Sons, Johnstone	189
Plastering.—Geo. Thomson & Son, Johnstone	101
Slating.—Geo. Thomson & Son, Johnstone	76
Tile-laying.—Thos. Main, Glasgow	36

CLEATOR (Cumberland).—Accepted for the erection of church room and caretaker's house, for the Rev. G. B. Amos, Cleator Parish Church. Mr. J. Stephenson Stout, architect, Gillfoot, Egremont:—

Masonry, &c.—Robert Pearson, Jacktress-road, Cleator Moor	£344 12 1
Plastering.—Robert Pearson, Jacktress-road, Cleator Moor	65 11 0
Slating.—Robert Pearson, Jacktress-road, Cleator Moor	115 18 0
Joinery.—John Martindale, Crossfield-road, Cleator Moor	198 3 0
Plumbing.—Jackson Sumpton, Market-place, Cleator Moor	46 10 0
Painting.—J. H. Tyson, Dalzell-street, Moor-row	10 15 0

CORSHAM (Wilts).—Accepted for new parsonage at Corsham Side, for Mr. G. P. Fuller. Mr. Harold Brakspear, architect, Corsham:—

R. Rudman, Chippenham £750

CRAY (Brecon).—For the erection of a chapel for the Calvinistic Methodists. Mr. Rees Llewellyn, architect, Birchgrove House, Llansamlet:—

Henry Jones	£900 8	Thomas & Jones	£897 0
William Jones, Cray, Breconshire*	900 0	John Jones	892 15
		* Accepted.	

DUNMOW (Essex).—For the erection of stables, carriage-house, sheds, &c., Roughie, for Mr. J. O. Barnard. Mr. J. W. Clark, architect, Coggeshall:—

E. West	£618 0	T. A. Goodey, Dunmow*	£488 10
J. Smith & Son	544 0	J. Pepper	483 0
A. W. Warren	500 0	* Accepted.	

DURHAM.—For the execution of sewerage works, Sherburn Hill and Broompark, for the Rural District Council. Mr. George Gregson, surveyor, Eastwood, Western Hill, Durham. Quantities by the surveyor:—

Sewer at Sherburn Hill.

G. T. Manners	£150 0	R. Oliver	£77
J. Manners	86 18	H. Nicholson, Sherburn*	75
[Surveyor's estimate, £80.]			

Sewer at Broompark.

P. Trater	£140	J. Manners	£101
G. T. Manners	123	R. Oliver, Durham*	99
H. Nicholson	110		
[Surveyor's estimate, £104.]			
* Accepted.			

HOLYWOOD (near Belfast).—For erection of a villa, stabling, &c.:—

Wm. Nimick	£1,093	Wm. Millar	£897
Campbell & Lowry	1 023	R. Ferris, Holywood*	750
		* Accepted.	

HOLYWOOD (near Belfast).—Erection of three houses:—

Wm. Neeson	£590	Wm. Millar	£435
R. Ferris	480	Grainger Bros., Holywood*	410
		* Accepted.	

HORWICH (Lancs.).—Accepted for the erection of square brick chimney, 45 yds. high, for Messrs. A. Mason & Son. Mr. E. W. Dyson, C.E., 17, Lee-lane, Horwich. Quantities by the engineer:—

Fairclough Leonard, Adlington, Lancs. £364 2 10

[Six other contractors tendered.]

HULL.—For alterations, &c., to 83, Charles-street, for the Committee of the Hull Blind Institution. Mr. T. Brownlow Thompson-hon. architect, 15, Parliament-street, Hull:—

Bricklaying.—F. Bilton, 66, Mayfield-street, Hull	£145 10 8
Joinery.—A. Windass, West Dock Avenue, Hull	199 15 6
Slating.—Smith & Hunter, Ocean-place, Anlaby-road	17 17 6
Plumbing.—J. Beal, Beverley-road	98 15 0
Plumbing.—Healey, Anlaby-road	36 0 0

KIDDERMINSTER.—For kerbing, farming, &c., Leswell and Clarence-streets, for the Town Council. Mr. A. Comber, Borough Surveyor, Town Hall, Kidderminster:—

T. Vale	£438 10	Geo. Law, Kidderminster (accepted)	£305 0

LEEDS.—Accepted for the erection of underground conveniences, Duncan-street, for the Corporation. Mr. Thomas Hewson, C.E., Municipal Buildings, Leeds:—

Bricklaying and Masonry.—Schofield, Son, & Co., Leeds	£1,239 19 4
Ornamental Iron Railing.—Walter McFarlane & Co., Glasgow	105 10 6
Plumbing.—Adams & Co., Leeds	303 12 0
Ventilating Fans.—J. H. Pickup & Co., Leeds	31 10 0
Pavement Lights.—The St. Pancras Ironworks Company, London	49 10 0
Flooring.—Diespeker & Co., London	51 0 0
Electric Lighting.—W. Wharam, Leeds	31 17 0
	£1,812 18 10

LEYTONSTONE (Essex).—For alterations to the Congregational Church, Leytonstone-road. Messrs. J. T. Newman & Jacques, architects, 2, Fen-court, E.C.:—

Hearle & Farrow	£1,095 0	J. Noakes*	£815 10
W. Gregar & Son	927 0	* Accepted.	

LONDON.—For the pulling down and rebuilding of Nos. 293-299, Kentish Town-road, N.W., for Mr. Herbert Beddall. Mr. Walter Batting, architect, 7, John-street, Adelphi, W.C. Quantities by Mr. C. Orlando Law, surveyor, Dacre House, Arundel-street, Strand, W.C.:—

R. Bristow & Sons	£11,600	Lawrance & Sons	£10,580
J. Allen & Sons	10,823	Gould & Brand	10,420
Patman & Fotheringham	10,793	A. A. Webber, London*	10,250
J. Carmichael	10,695	* Accepted.	

LONDON.—Accepted for new shop front and enclosure for Mr. George Pratt:—

Speaight & Co. £460

LONDON.—For the erection of a detached house at Wimbledon Park. Mr. H. Phelps Drew, architect, 33, King-street, Covent Garden. Quantities by the architect:—

Dickens	£1,650	Pater & Co.	£1,200
Edwards & Medway	1,350	Burges, Wimbledon*	1,180
Norton	1,250	* Accepted.	

LONDON.—For alterations and additions to No. 14, Sloane-street, S.W. Mr. R. G. Hammond, architect, 16, Essex-street, Strand, W.C.:—

Waring & Co., Ltd.	£1,820	Stimpson & Co*	£1,562
Garlick & Horton, Ltd.	1,634	* Accepted.	

LONDON.—For erecting new factory on the Lea Bank, Lower Edmonton, for Messrs. W. V. Aldridge & Son, Islington Green. Mr. E. J. Harrison, architect, 38, Bow-lane, Cheapside, E.C.:—

Harman	£2,200	
Extra for cement	50	
		2,250 0
Going	£1,795	
Extra for cement	63	
		1,858 0
E. Houghton & Son	£1,798	
Extra for cement	50	
		1,848 0
Porter	£1,758	
Extra for cement	80	
		1,838 0

LONDON.—For pulling down and rebuilding Nos. 17 and 19 Hare-street, Woolwich, for Mr. J. Sackett. Messrs. Church, Quick, & Whincop, architects:—

Proctor	£2 397	Sandford	£1,879
Ware	2,070	Thomas & Edge*	1,867
Kitley	1,950	* Accepted.	

LONDON.—For pulling down and rebuilding Nos. 40, 42, and part of 44, Hare-street, Woolwich, for Mr. J. S. Taylor. Mr. Percy H. Monckton, architect:—

West Bros., Rochester	£4,515	H. L. Holloway	£3,947
Nightingale	4 224	Thomas & Edge	3,900
Bailey, Son, & Holness	4,045	Harriss & Wardrop	3,873
Jerrard & Son	3,984	Turtle & Appleton	3,530
J. Greenwood	3,960		

LONDON.—For alterations to the "Fox and Hounds" public-house, Plumstead Common-road, Woolwich, for Mr. J. Hobson. Messrs. Church, Quick, & Whincop, architects:—

Kitley	£697	Hodgin	£650
Proctor	678	Foreman	638
Ware	665	Thomas & Edge*	634
Sandford	658	* Accepted.	

LONDON.—For erecting a new theatre in St. Martin's-court, Charing Cross-road, London, W.C., for Mr. Charles Wyndham. Mr. W. G. R. Sprague, architect, Fitzalan House, Arundel-street, Strand, W.C. Quantities by Mr. A. R. Henderson, surveyor, 47, Pall Mall, S.W.:—

	Bath Stone. £	Extra for Stage Cellar. £ s.
Foster & Dicksee	28,036	1,268 0
C. Gray Hill	25,805	975 0
Wilkinson Bros.	24,830	1,292 0
Stimpson & Co.	24,800	1,285 0
Courtney & Fairbairn	24,800	1,260 0
Walter Wallis	24,391	1,273 0
J. Howe & Co.	24,280	1,060 0
W. H. Lorden & Sons	24,268	1,056 0
Kirk & Randall	23 731	1,208 0
H. & E. Lea	23,237	1,091 0
H. L. Holloway	23,120	1,170 0
H. Burman & Sons	23 032	1,134 0
Harris & Wardrop	22,675	1,157 0
W. Downs	22,650	1,166 0
Patman & Fotheringham	22,515	1,163 0
F. & H. F. Higgs	22,360	1,132 0
C. F. Kearley*	21,956	1,093 19

* Amended and reduced tender accepted at £20,460.

LONDON.—For erecting new premises 2, 3 and 4, Bishopsgate-street Without, E.C., for Mr. D. C. Apperly. Mr. Augustus E. Hughes, architect, 28, Mortimer-street, Regent-street, W. Quantities by Mr. A. R. Henderson, surveyor, 47, Pall Mall, S.W.:—

Lawrence & Sons	£11,795	Patrick & Son	£10,825
Colls & Sons	11,444	Adamson & Sons	10,724
Hall, Beddall & Co.	11,320	H. L. Holloway	10,690
Falkner & Sons	11,297	Woodward & Co.	10,682
Higgs & Hill	10,984	Wm. Downs (accepted)	10,599
Williams & Son	10,975		

MALMESBURY (Wilts).—For addition of new billiard-room wing to the Manor House, Burton Hill, for Colonel Spencer Hall. Mr. Harold Brakspear, architect, Corsham:—

Baker & Sons	£970	R. Rudman, Chippenham*	£937
		* Accepted.	

MELKSHAM (Wilts).—Accepted for new shop and house in the High-street, for Mr. W. Collett. Mr. Harold Brakspear, architect Corsham:—

Bigwood & Co. £700

NEW SWINDON (Wilts.).—For the erection of workshops (Section B), Victoria-road, for the Urban District Council. Mr. H. J. Hamp, Surveyor, Public Offices, Swindon:—

C. Williams	£833 0 0	H. & C. Spackman, Swindon (accepted)	£804 19
J. Williams	813 0 0		

NEWTOWNARDS (Ireland).—For the erection of a dispensary and residence, Lisbarnet, for the Union Guardians. Mr. T. Roe, architect, 1, Lombard-street, Belfast:—

McClune	£1,495	Wm. Kerr	£1,200
Hanna	1,400	Campbell & Lowry	1,250
Montgomery	1,297	Wm. McGee	1,165
Caldwell	1,197	Morrow, Ballygowan*	1,195
		* Accepted.	

PLAISTOW (Essex).—For the erection of twenty-nine houses, Hermit-road, for the West Ham Town Council. Mr. Lewis Angell, Borough Engineer, Town Hall, Stratford, E.:—

G. W. Reed	£17,874	G. Sharpe	£15,350
J. G. Horlock	15,890	H. J. Carter	13,991
Balaam Bros.	15,550	Merredew & Wort	13,947

PORT TALBOT (Wales).—For the erection of a shop and premises, Station-road, for Mr. T. B. Bamford. Mr. Frank B. Smith, architect, Port Talbot:—

Jno. Davies	£698 0 0	W. Stephens, Swansea*	£529 19 6
Stephen Rees	662 0 0		
Morgan Cox	595 0 0	* Accepted.	

READING.—For erecting new premises, Broad-street, Reading, for Mr. A. H. Bull. Mr. F. W. Albury, architect, Friar-street, Reading. Quantities by Mr. A. R. Henderson, surveyor, 47, Pall Mall, S.W.:—

Higgs & Sons	£4,685	Lewis Brothers	£4,350
Bottrill & Son	4,491	Margetts	4,279
Stokes	4,399	Fitt	4 2
Kingerlee	4,370		

[Amended and reduced estimate accepted at £3,747.]

ROUGHDOWN.—For the erection of a house at Roughdown, Herts. Mr. C. H. Row, architect. Quantities by Mr. J. Rookwood:—

Brightman	£5,471	Honour & Son	£5,250
Horn	5,394	Webster & Cannon, Aylesbury	4,998
Smith	5,292		

SKIPTON.—For the execution of water-supply works, &c., for the Rural District Council. Mr. A. Rodwell, engineer, Skipton. Quantities by engineer:—

T. Rowland	£896 3 4	G. H. Mason	£695 12 3
Hartley & Pickles	888 5 7	H. Wilson	684 0 7
J. & M. Hawley	848 5 11	G. Dougill, Aysgarth*	656 12 2
T. Young & Co.	811 0 3	Sheepbridge Coal and Iron Co.†	198 11 8
T. Kassel	704 1 0		

* Accepted. † Pipes only.

SOUTHALL.—For the erection of "Bricklayers' Arms" public-house, for Messrs. Sedgwick & Co., Watford. Mr. Chas. P. Ayres, architect, Watford:—

Brightman	£1,163	A. & B. Hanson, Southall*	£1,090
Turner & Co.	1,139		

* Accepted.

STAMFORD.—Accepted for the supply of broken granite, &c., at the Station yard, for the Town Council. Mr. Jas. Richardson, Borough Surveyor, Stamford:—

Ellis & Everard, Bardon Hill Quarries:—
150 tons XX ..... 10s. per ton.
200 tons XXX ..... 9s. "
Groby Granite Company:—
200 tons XX ..... 10s. per ton.
Grimley & Son, Sutton Bridge:—
200 tons XX Cliffe Hill granite ..... 9s. 9d. per ton.

SWINDON.—Accepted for sewering, metalling, &c., several streets, for the Swindon New Town Council. Mr. H. J. Hamp, surveyor, Regent-circus, New Swindon:—

Kent-road.
W. Chambers, Swindon £569 11 7
Tennyson-road.
Free & Sons, Maidenhead 332 0 0
Cromby-street.
Free & Sons, Maidenhead 1,010 0 0
Stanier-street.
B. Winchcombe, Swindon 149 18 9
Newhall-street.
Free & Sons, Maidenhead 301 0 0
Edgeware-road.
Free & Sons, Maidenhead 186 0 0
Seven Back Roads from Eastcott-hill to Curtis-street.
Free & Sons, Maidenhead 298 11 0

THORNHILL (Yorkshire).—For the execution of sewerage works, &c., for the Urban District Council. Mr. S. W. Parker, Surveyor, Council's Offices, Thornhill. Quantities by the Surveyor:—

For Executing the Works, &c.
Garforth Bros., contractors, &c., Ninfield £2,519 2 5
For the Supplying of Earthenware Pipes, &c.
G. & J. Haigh, Ravenslodge Brickworks, Dewsbury [Schedule of prices given].

WAUN-LLWYD (Mon.).—For the erection of a hotel, for Mr. J. B. Yendoll. Messrs. Swalwell & Creighton, architects, Dock-street, Newport, Mon. Quantities by the architects:—

Rodgers & Williams	£6,525	F. S. Parfitt	£5,500
J. Charles	6,430	David Lewes, Llanhelteth, Mon.*	5,500
A. Lawson & Co.	6,173	D. Jones	5,402
E. C. Jordan	5,880	A. C. Parfitt	5,302
J. G. Thomas	5,765	J. Morgan	5,135
C. H. Reed	5,600		

* Accepted.

WEST BRIDGFORD.—For the execution of sewerage works, for the Urban District Council. Mr. W. Pare, C.E., West Bridgford:—

Bower Bros.	£3,040 19 10	Barry	£2,954 19 6
Cope & Raynor, W. Bridgford*	3,035 3 4	R. Peck	2,124 1 0

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R. Ballard, Ltd.	£4,124 16 8	W. Griffiths	£3,701 8 9
B. W. Glenny	3,962 7 3	T. Adams	3,683 10 11
J. Jackson, Plaistow*	3,745 13 0	G. Bell	3,640 3 3

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WEST HAM.—For the execution of sewerage works (1,200 yds.), for the Town Council. Mr. Lewis Angell, Borough Engineer, Town Hall, Stratford, E.:—

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W. Neave & Son	23,834 0 0	Pedrith & Co.	19,975 11 5
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J. Jackson	20,330 0 0		

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WIMBLEDON.—For making up Ridgway-gardens and Edgehill, for the Urban District Council:—

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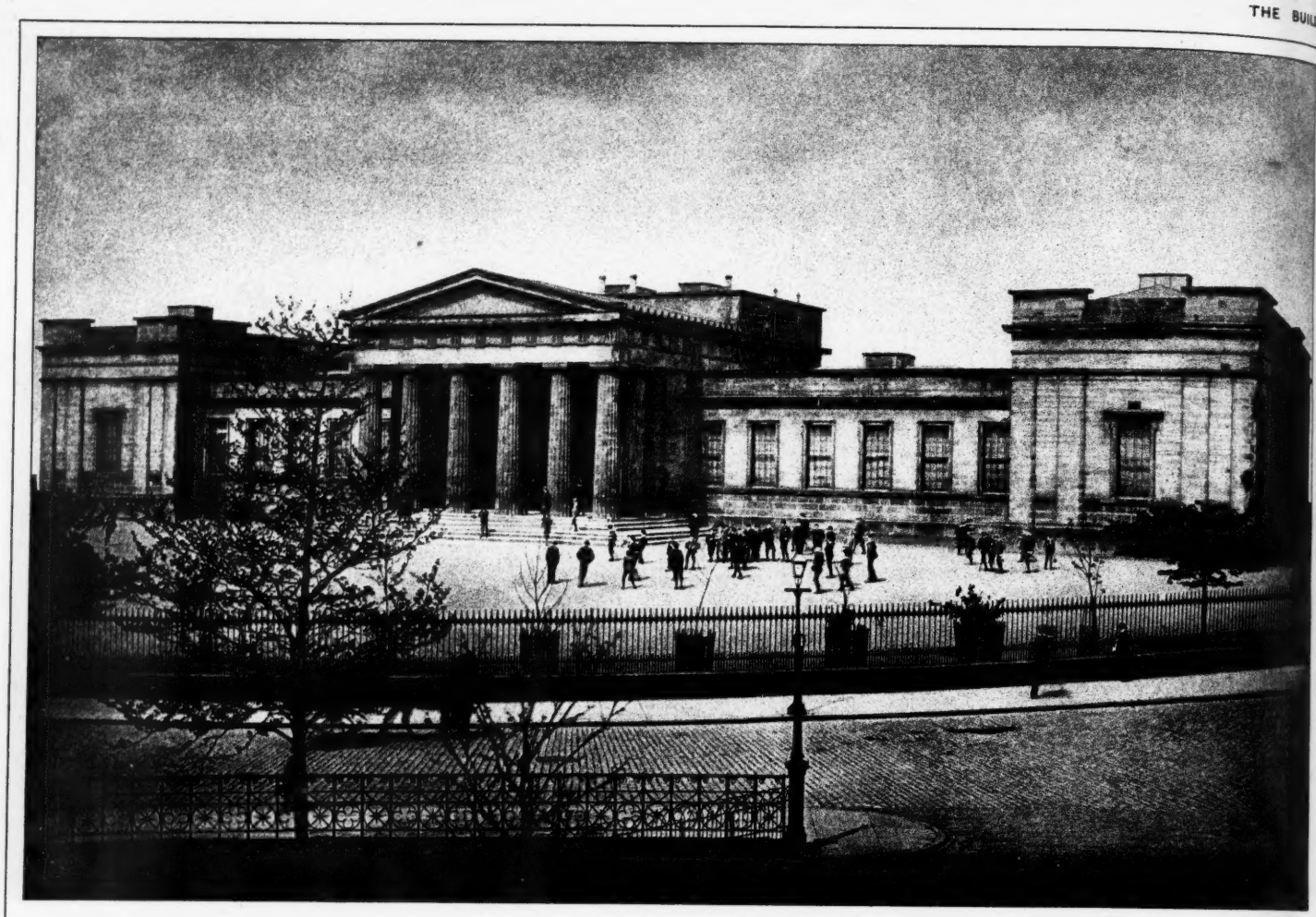

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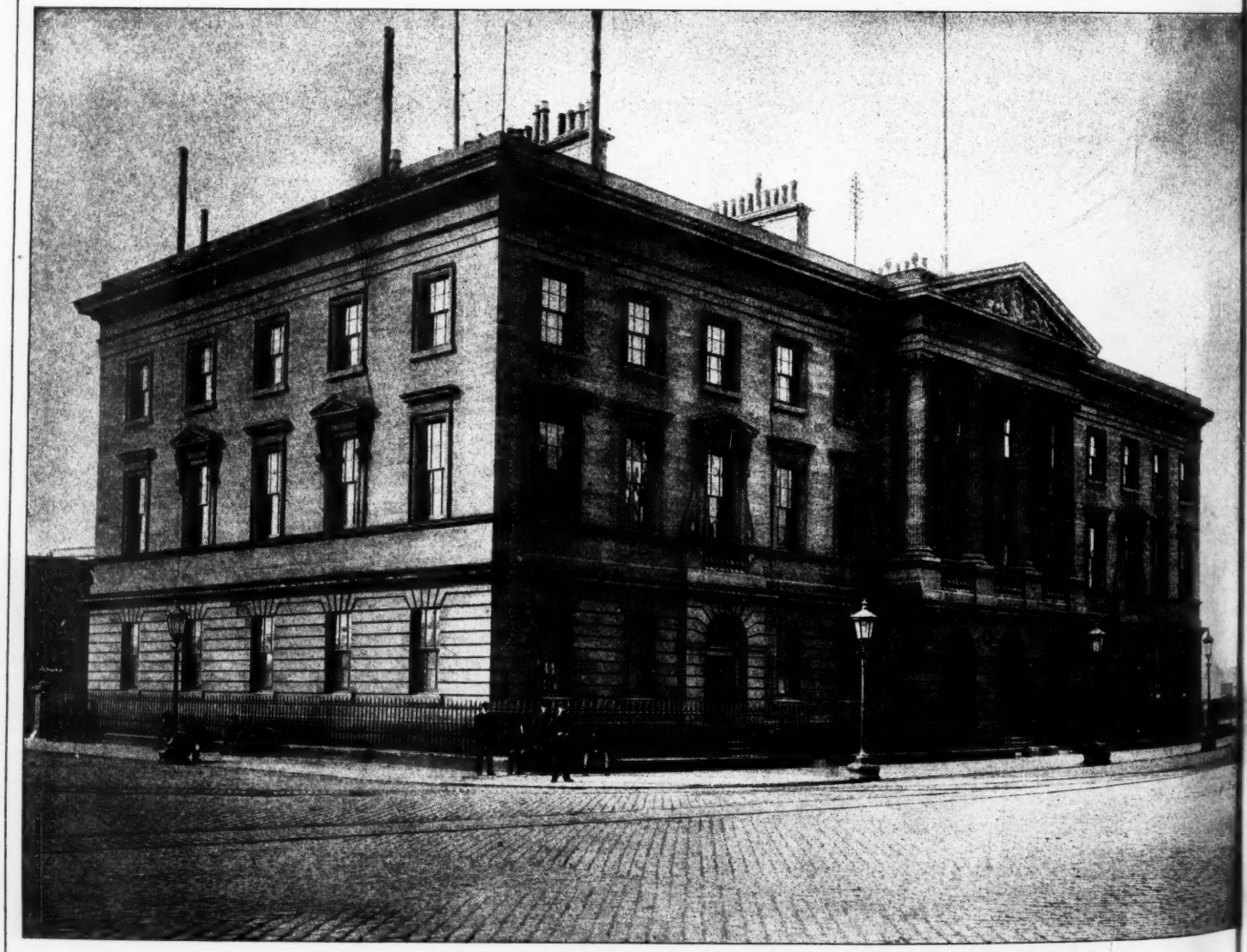

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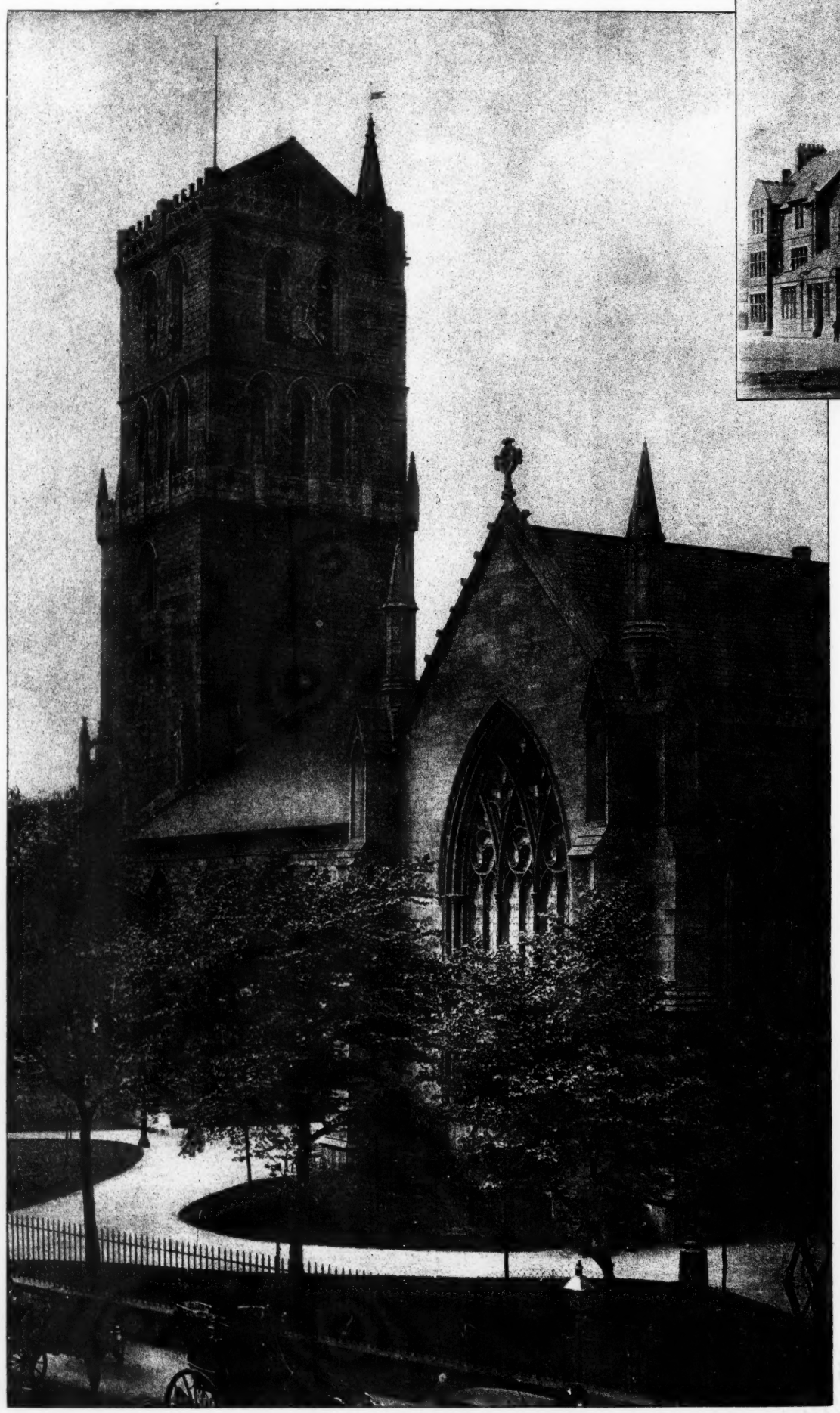

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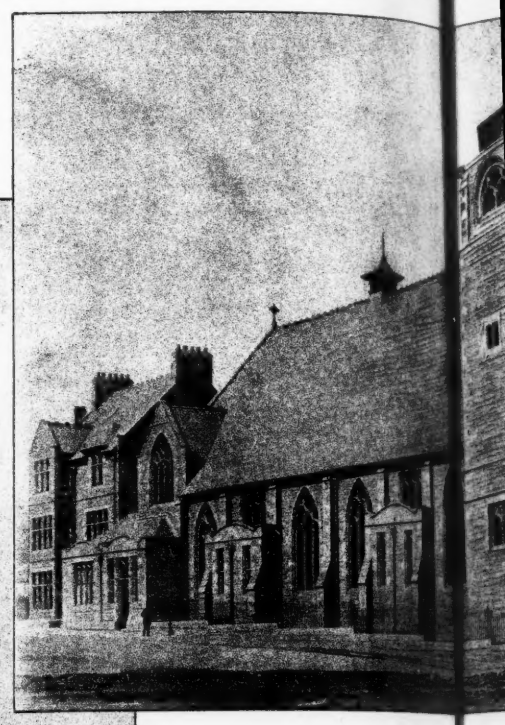

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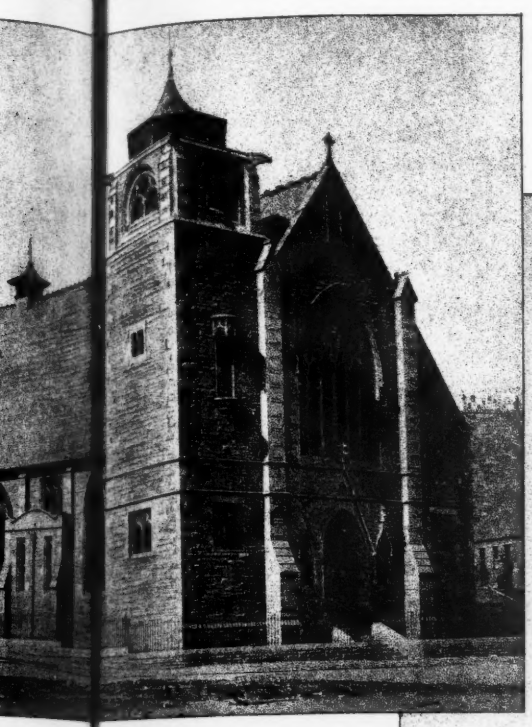

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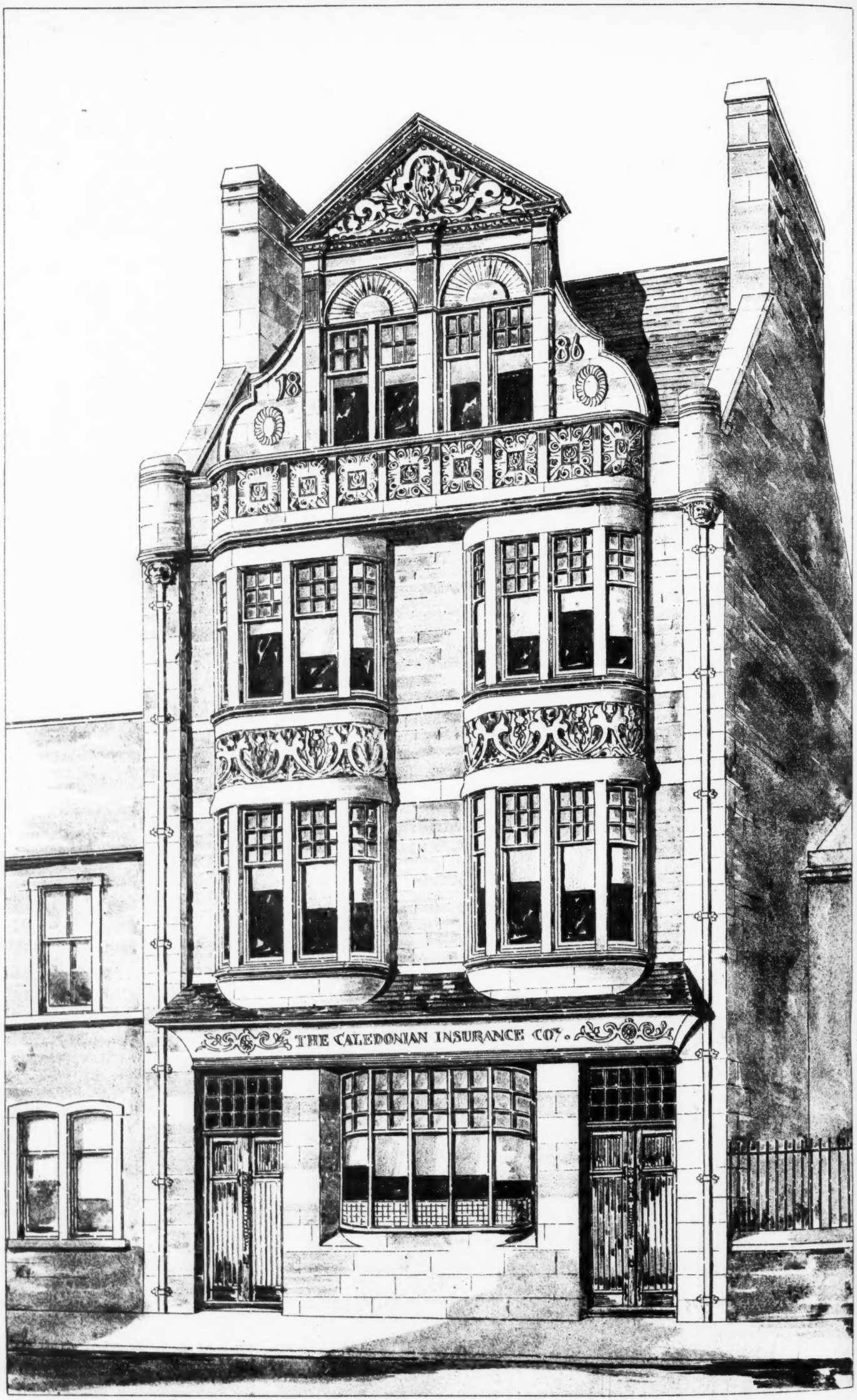

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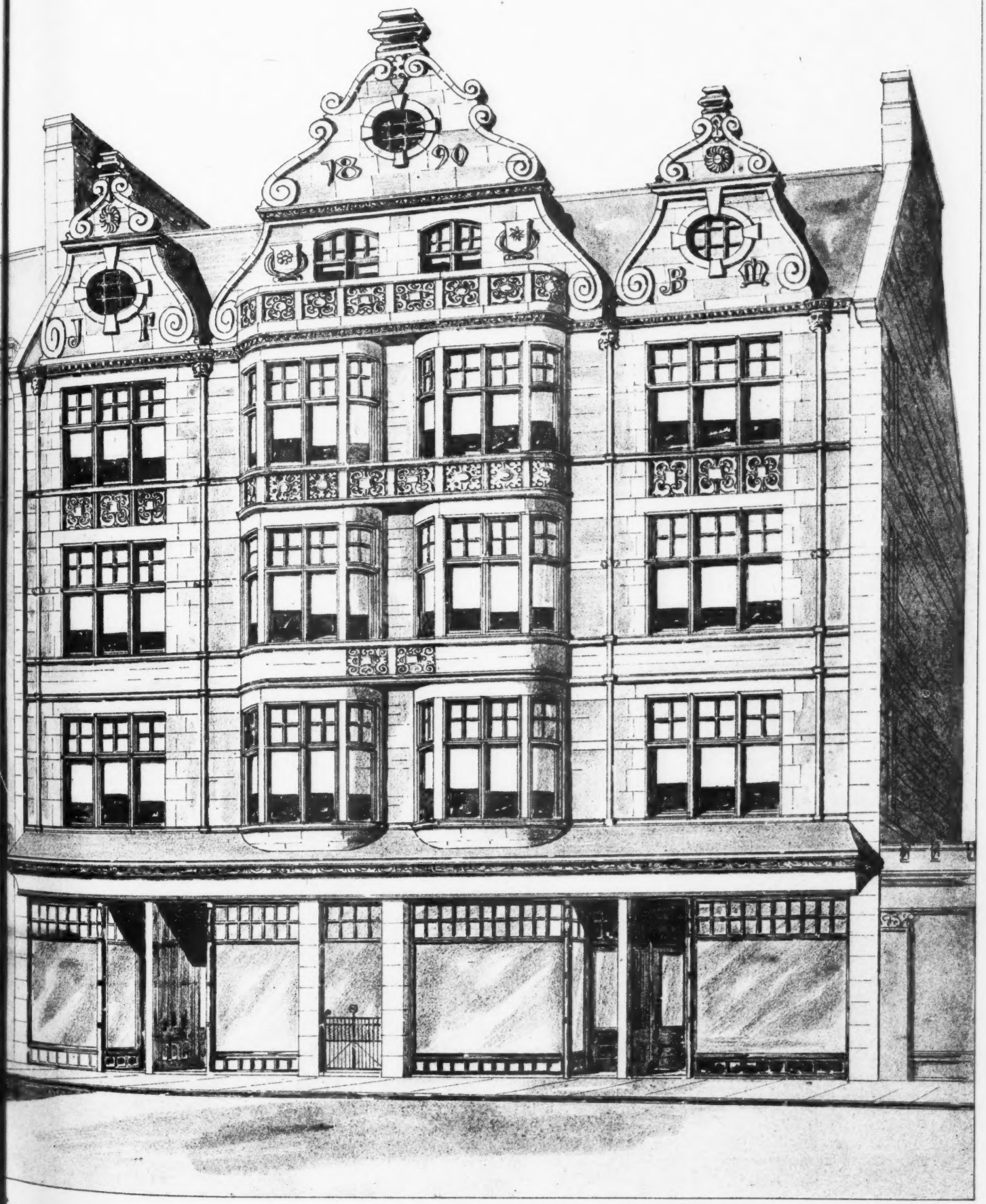

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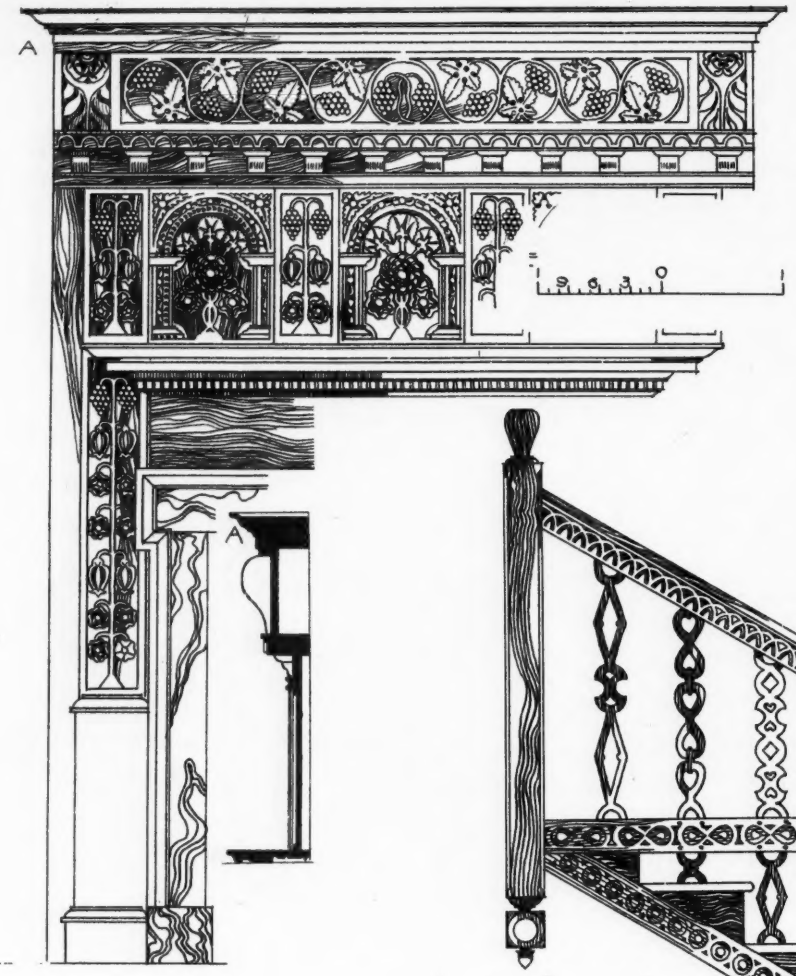

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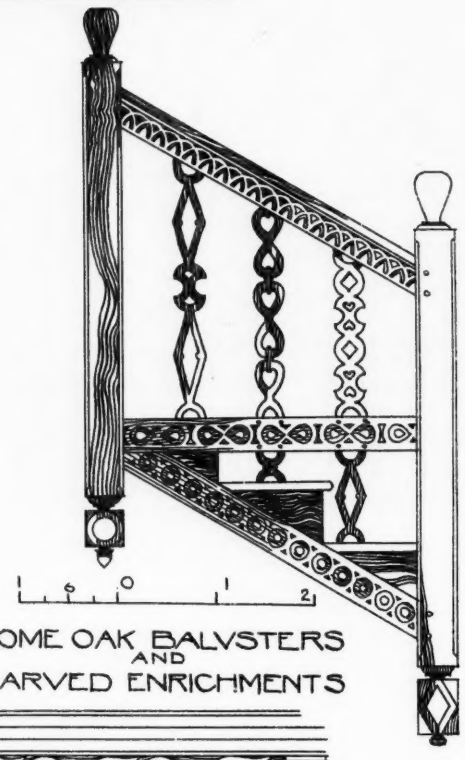

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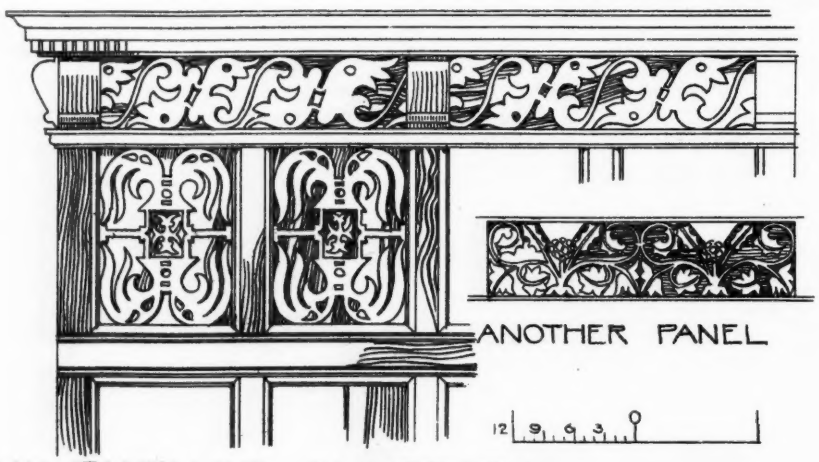

ANOTHER PANEL

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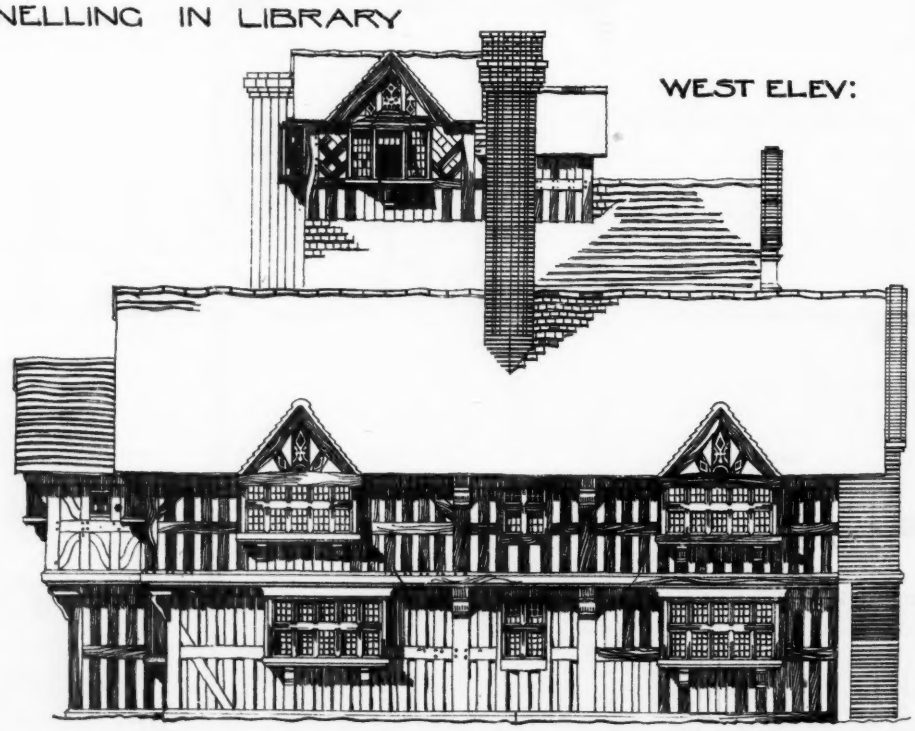

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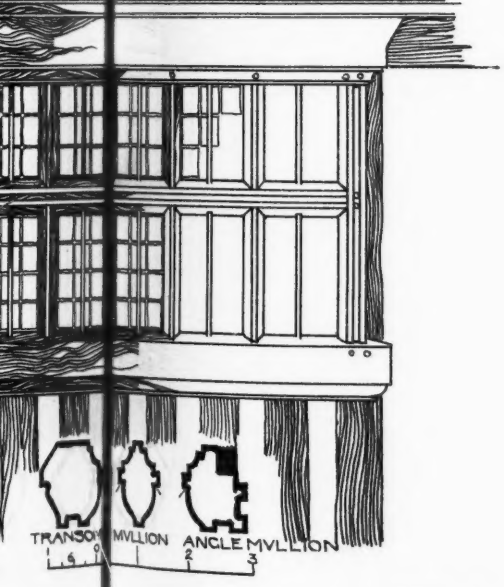
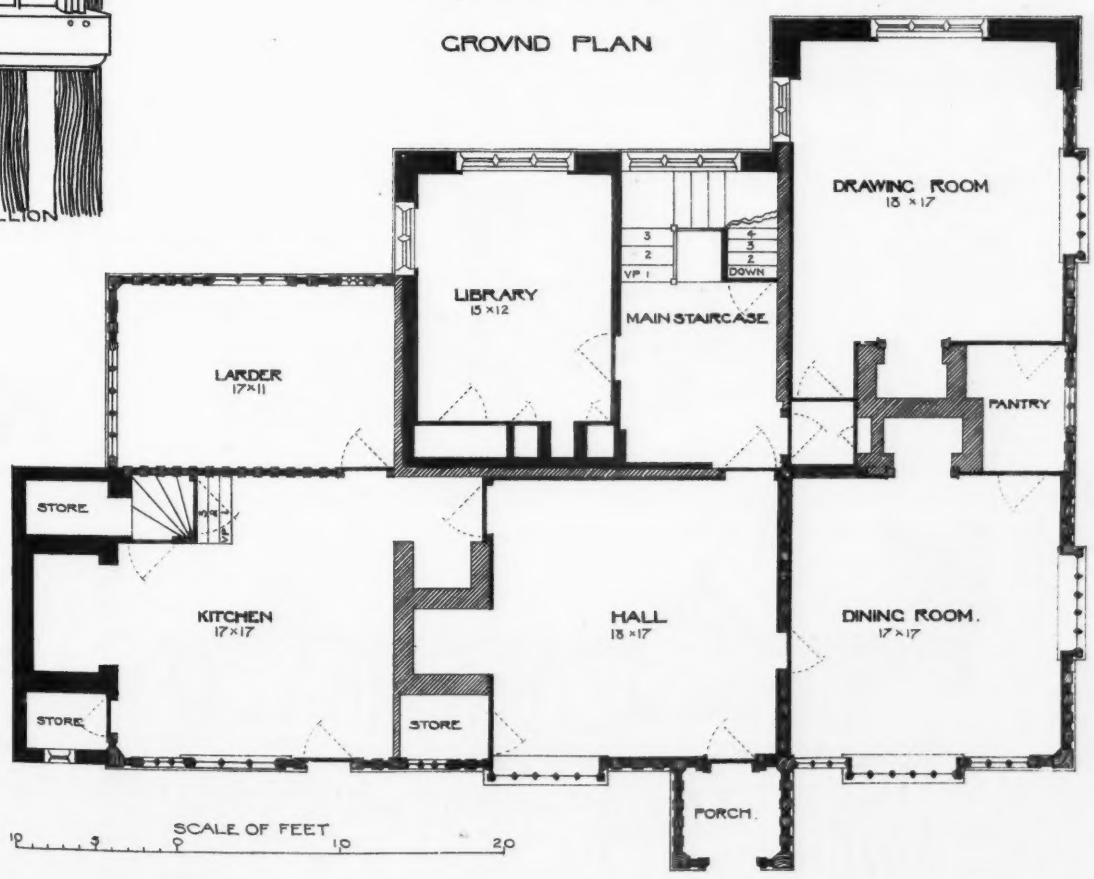


HATCHED SHEWS ORIGINAL BVILDING. CIRCA 1450
BLACK SHEWS ADDITIONS IN BRICK, CIRCA 1620
PANELLING IN ROOMS SAME DATE AS ADDITIONS

GROVND PLAN



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